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Privatizing the public sector:an alternative.

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BY

JOHN L. BALL

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A REPORT PRESENTED TO THE GRADUATE COMMITTEE
OF THE DEPARTMENT OF CIVIL ENGINEERING IN
THE PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ENGINEERING

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To Cathy

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CHAPTER I

INTRODUCTION

1.1 Purpose

The purpose of this report is to analyze the concept of privatization and provide the basic steps to understanding how a privatization contract works. With the information provided by this report, one should be able to determine whether this method of contracting is applicable to his needs or the needs of his municipality. It is intended that this will be the first of a series of reports written at the University of Florida giving a detailed review of all aspects of privatization. The goal of this series of reports is to develop a graduate level management/contracting/public works operations course of two or three credit hours focusing on privatization.

It is hoped that this report might stimulate further interest in the subject of privatization among students, contractors, and public administrators. In this time of huge government deficits, high interest rates, and uncertain financial forecasts, privatization may provide one method for the provision of public capital growth and supply of services. This report will review the possibilities and potential of privatization for use by public agencies.

1.2 Scope

This report is intended to be an overview of the concept of privatization. The reader is assumed to have a general understanding of construction management, including construction contracts, contract administration, and engineering economics. This report presents topics in a general nature so that engineering students, engineers, contractors, business administrators, and government officials can all understand the points contained. It is important that the reader realize that privatization can come in an almost endless variety of forms and that this report will present just a few of these.

Chapter II is a presentation of the condition of the United States' decaying public works infrastructure including a description of deteriorating facilities, overloaded and strained facilities, and declining investment available for growth, rehabilitation, and repair. Chapter III introduces various solutions for financing needed growth, rehabilitation, and repair of America's infrastructure. Discussed are financing alternatives, alternative methods of providing services, and advantages and disadvantages of privatization. In chapter IV, the privatization method is outlined. Included are the Arthur Young method of implementation of privatization, a description of various privatization options, checks and balances required, an overview of the privatization request for proposals, and finally a presentation of the approaches used by several leading corporations and a major underwriter of privatization contracts. Chapter V is an assessment of the risks associated with privatization projects. This chapter reviews the risk factors and elements, the considerations concerning

risk management, risk allocation for both capital costs and operation and maintenance costs, and risk sharing on privatization projects. Chapter VI is a detailed analysis of the McKay Bay Refuse-to-Energy Project in Tampa, Florida, a privatization project by Waste Management, Inc. This analysis covers the project scope, background information, description of the facility, design and construction contract, operation and maintenance contract, risk assessment, cost escalation, and division of responsibilities. Chapter VII presents conclusions and recommendations.

In conjunction with this report a survey of 73 of the top 400 contractors as designated by Engineering News-Record was conducted to determine the extent privatization is used by those corporations. The results of the survey are documented in Appendix A and the information gained is used throughout the report.

1.3 Privatization Defined

Privatization is the concept of construction contracting whereby traditionally public provided services are provided by the private sector under contract to a public agency. Financing, or the arrangement of financing, design, construction, and operation and maintenance of the facility that provides the service may all be performed by the private corporation which contracts with the public entity. Monitoring is performed throughout the life of the contract by the public. Sufficient safeguards are included in the contract to protect the interests of both parties; mainly, the service provided to the public and the profit received by the private corporation. Financing may be accomplished by the public entity using traditional

methods, by the private corporation itself, by a third party underwriter arranged by the private corporation, or by a combination of these.

The purpose of privatization is to provide the public sector with a solution for providing needed infrastructure facilities and services when they are financially unable to fund their acquisition or upgrading or to provide the service. The financing alternatives of privatization are the heart of the concept. Decreases in federal and state-funded programs have shifted financing responsibility back to the communities, which must often decide whether to proceed or cancel projects due to lack of funds. Privatization provides another alternative to these communities. Private sector funds are used and the project can proceed. The process is "driven" by the federal tax breaks given to the private sector. In reality, therefore, it is subsidized by all tax payers. As this report will show, all parties benefit, the public sector receiving its needed facility and service, the private corporation its profit and tax breaks.

CHAPTER II

AMERICA'S DECAYING INFRASTRUCTURE

2.1 Decaying Infrastructure

America's public works infrastructure is wearing out faster than it is being replaced. This rapidly deteriorating condition is fast becoming a barrier to continued economical growth and the well being of the public in cities and counties across the United States. These deteriorated public facilities threaten the very life of our communities, threaten the continuation of basic services such as fire protection, public transportation, water supplies, sewerage processing, secure prisons, and flood protection, and inhibit growth. Because of tight budgets and inflation, the maintenance of our national, state, county, and local facilities is often deferred. Replacement and rehabilitation of old systems is often cancelled or postponed. New construction is often delayed, phased, or cancelled due to these financial constraints.

The exact condition of today's public works infrastructure is not documented on a national scale, but some localized studies have exposed alarming statistics.

*The 42,500-mile Interstate Highway System is deteriorating at a rate requiring reconstruction of over 2,000 miles per year. Because of inadequate funding and maintenance during the 1970s, over 8,000 miles of this road system and 13% of its bridges are now beyond their designed service life and have an immediate need

to be rebuilt. This road system, which carries 20% of all highway traffic, could severely affect the nation if further deterioration is allowed to continue (11-2,3).

*One of every five bridges in the United States requires either rehabilitation or reconstruction. The Department of Transportation estimated in 1981 that the cost to accomplish this task could equal $33 billion, but only $1.3 billio was allocated to bridge repair in that year (13-43).

*The nation's municipal water supply will continue to face heavy demands throughout the 1980s. The 756 urban areas with populations over 50,000 will require between $75 billion and $110 billion to maintain their water systems over the next 20 years. Almost one-fifth of these communities will face investment shortages, even if present water rates are doubled to produce capital for investment. At least $10-$13 billion beyond that generated by user changes will be required (36-40).

*Over $25 billion in government funds will be required during the next five years to meet existing ater pollution control standards (35-vii).

*Over $40 billion must be invested in New York City alone over the next nine years to repair, service, and rebuild basic public works facilities that include: 1,000 bridges, 2 aquaducts, 1 large water tunnel, several reservoirs, 6,200 miles of paved roads, 6,000 miles of sewers, 6,000 miles of water lines, 6,700 subway cars, 4,500 buses, 25,000 acres of parks, 17 hospitals, 19 city university campuses, 950 schools, 200 libraries, and hundreds of fire houses and police stations. Because of fiscal

conditions, New York City will invest only about $1.4 billion per year to repair or rebuild these services (13-42).

*Cleveland's public works requires $1 billion now to rebuild its basic services. $250 to $500 million is needed to replace and renovate the public-owned water system, $150 million to repair the city's bridges, and over $340 million spent for flood control facilities. In addition, Cleveland must rebuild or resurface 30% of its streets, now in a state of advanced deterioration, and reconstruct the sewer collection system, which often floods commercial and residential buildings (21-52).

*Even financially healthy cities face trouble ahead. In Dallas, the next nine years will require a $700 million investment in water and sewerage treatment systems. More than $109 million must be generated to repair deteriorated city streets (39-40).

*Over one-half of the United States' 3,500 jails are over 30 years old. At least 1,300, and maybe as many as 3,000 of these facilities, will need rebuilding or rehabilitation in the next ten years (23).

*A large number of the 43,500 dams in this country require immediate attention to reduce hazardous deficiencies. The funds even to inspect these facilities have been difficult to obtain (37-25).

The examples presented are not isolated instances but instead are representative of the declining condition of the United States' infrastructure. Thus far, public government has been unable to meet the growing demands of society upon the public works. The challenge

today is to find ways to finance the needed repairs, renovations, and new construction needed to meet an ever-increasing demand.

2.2 Strained Facilities

A large number of communities' basic public works facilities, their roads, streets, water systems, and sewerage treatment plants are too small, too old, obsolete, or in poor repair. One rule of thumb is when a wastewater system is operating at 80% of capacity, the community will not be able to add additional industrial load. The operating ratio for water treatment indicates full capacity at 70%. A Department of Commerce survey of 6,870 communities' wastewater treatment capacity reported that 3,133 (46%) of the systems were operating at 80% of capacity or higher. The same survey indicated that 1,844 of 5,622 places have water treatment systems operating at 70% or greater capacity. See Table 2-1 (9-22,23). Public facilities such as transportation, solid waste, toxic waste disposal, water, and power are essential to private sector investment. Reports indicate that at least one-half and probably two-thirds of the nation's communities are unable to support additional modern development until major new investments are made in their basic facilities (9-17).

2.3 Declining Investment

The value of the United States' stock of public works has not been growing. The net value of federal public works investments has actually declined during the period 1969 to the present. While the value of state and local investments in public facilities increased during the same period, it was at a declining rate (9-5).

TABLE 2-1. MUNICIPAL AND INDUSTRIAL WASTEWATER AND WATER TREATMENT BY CAPACITIES BY STATE

State	WASTEWATER TREATMENT			WATER TREATMENT		
	Number of Places Surveyed	Number of Places Using 80% or More of Capacity	Percent of Total Surveyed	Number of Places Surveyed	Number of Places Using 70% or More of Capacity	Percent of Total Surveyed
Alabama	156	63	40.3	121	54	44.6
Alaska	11	6	54.5	22	10	45.4
Arizona	62	29	46.7	18	5	27.7
Arkansas	112	57	50.8	75	15	20.0
California	369	229	62.0	271	70	25.8
Colorado	95	45	47.3	80	5	6.2
Connecticut	90	34	37.7	56	18	32.1
Delaware	11	3	27.2	19	8	42.1
Florida	231	85	36.7	177	54	30.5
Georgia	215	83	38.6	132	55	41.6
Hawaii	29	6	20.6	3	1	33.3

TABLE 2-1--continued

State	WASTEWATER TREATMENT			WATER TREATMENT		
	Number of Places Surveyed	Number of Places Using 80% or More of Capacity	Percent of Total Surveyed	Number of Places Surveyed	Number of Places Using 70% or More of Capacity	Percent of Total Surveyed
Idaho	41	18	43.9	27	10	37.0
Illinois	363	188	51.7	386	177	45.8
Indiana	133	72	54.1	176	85	48.2
Iowa	124	60	48.3	129	35	27.1
Kansas	144	66	45.8	104	15	14.4
Kentucky	114	55	48.2	122	72	59.0
Louisiana	155	66	42.5	157	49	31.2
Maine	57	29	50.8	81	30	37.0
Maryland	76	22	28.9	50	N/A	N/A
Massachusetts	92	30	32.6	200	48	24.0
Michigan*	203	N/A	N/A	165	21	12.7
Minnesota	117	42	35.8	168	15	8.9

TABLE 2-1--continued

State	WASTEWATER TREATMENT			WATER TREATMENT		
	Number of Places Surveyed	Number of Places Using 80% or More of Capacity	Percent of Total Surveyed	Number of Places Surveyed	Number of Places Using 70% or More of Capacity	Percent of Total Surveyed
Mississippi	96	25	26.0	129	67	51.9
Missouri	186	71	38.1	124	43	34.6
Montana	39	19	48.7	16	5	31.2
Nebraska	59	28	47.4	56	8	14.2
Nevada	22	8	36.3	15	3	20.0
New Hampshire	33	17	51.5	55	15	27.2
New Jersey	242	126	52.0	218	101	46.3
New Mexico	45	15	33.3	31	5	16.1
New York	363	187	51.5	N/A	N/A	N/A
North Carolina	163	73	44.7	240	21	8.7
North Dakota	23	11	47.8	N/A	N/A	N/A
Ohio	400	212	53.0	498	276	55.4

TABLE 2-1--continued

State	WASTEWATER TREATMENT			WATER TREATMENT		
	Number of Places Surveyed	Number of Places Using 80% or More of Capacity	Percent of Total Surveyed	Number of Places Surveyed	Number of Places Using 70% or More of Capacity	Percent of Total Surveyed
Oklahoma	166	65	39.1	157	17	10.8
Oregon	96	20	20.8	158	18	11.3
Pennsylvania	461	198	42.9	288	177	61.4
Rhode Island	14	4	28.5	18	4	22.2
South Carolina	202	105	51.9	120	30	25,0
South Dakota	27	16	59.2	31	2	6.4
Tennessee	136	56	41.1	113	30	26.5
Texas	486	285	58.6	121	57	47.1
Utah	48	30	62.5	38	5	13.1
Vermont	45	25	55.5	33	15	45.4
Virginia	137	65	47.4	122	43	35.2
Washington	102	36	35.2	113	6	5.3

TABLE 2-1--continued

State	WASTEWATER TREATMENT			WATER TREATMENT		
	Number of Places Surveyed	Number of Places Using 80% or More of Capacity	Percent of Total Surveyed	Number of Places Surveyed	Number of Places Using 70% or More of Capacity	Percent of Total Surveyed
West Virginia	77	39	50.6	110	37	33.6
Wisconsin	176	101	57.3	60	2	3.3
Wyoming	26	8	30.7	19	5	26.3
TOTAL	6,870	3,133	45.6	5,622	1,844	32.7

Despite the evidence of deterioration in communities around the nation, public works investments, measured in constant dollars, fell from $38.6 billion in 1965 to less than $31 billion in 1977--a 21% decline. On a per capita basis, public works investments in constant dollars dropped from $198 per person in 1965 to $140 in 1977--a 29% decline. When measured against the value of the Gross National Product, public works investments declined from 4.1% in 1965 to 2.3% in 1977--a 44% decline. See Table 2-2 (9-8). While government expenditures have significantly increased during this same period, investment in public facilities has declined (9-8).

There are different reasons for such a decline. The decrease in the birth rate and the maturation of the baby boom generation have reduced the need for some facilities. The major reason, though, appears to be a movement to cut government spending for public facilities, including new construction, repair, rehabilitation, and maintenance, at all levels of government in order to balance budgets, hold down the rate of growth, and finance a growing amount of social services. These approaches may meet short-term needs but have a long-term effect by contributing to the general decline of the nation's infrastructure.

TABLE 2-2. PUBLIC WORKS INVESTMENT IN THE UNITED STATES
1965-1978
(1972 Constant Dollars)

Category	1965	1970	1971	1972	1973	1974	1975	1976	1977
Gross National Product (billions)	926	1,075	1,073	1,171	1,235	1,218	1,202	1,271	1,333
Population (millions)	194	204	207	209	210	211	213	215	217
Total Gross Capital Investment All Units of Government (billions)	38.6	37.5	36.9	35.9	36.2	36.8	34.8	32.0	30.4
Federal Investment	7.0	3.7	3.8	3.8	3.8	3.8	3.9	3.9	4.3
State and Local Investment	31.6	33.8	33.2	32.2	32.4	33.0	30.9	28.2	26.1
Public Works as a Percent of GNP	4.1	3.4	3.2	3.0	2.9	3.0	2.9	2.5	2.3
Per Capita Public Works Investment ($)	198	183	178	172	172	173	163	148	140

CHAPTER III

FINANCING PUBLIC WORKS FOR THE FUTURE

3.1 Rebuilding America's Public Works

As the 1980s reach the midpoint, competition for the financial capital available in the United States has become intense. As the nation emerges from the recent recession the private sector will require substantial investment to regain the market edge, both at home and abroad. The retooling and modernization of our basic industries has begun in earnest. General Motors alone is now engaged in a five-year re-tooling effort that will cost well over $40 billion (9-30). The high technology fields are growing and will draw much of the available talent and money. As this paper has discussed, though, now is the time that the nation's public work infrastructure must be renovated and upgraded.

The scope of the needed work for public facilities is difficult to determine. Presently, no national prioritization of projects, no inventory and condition of the existing facilities, and no estimates of repair are available. It is clear that all needed projects cannot be funded. Too many public and private demands for capital exist (1-30).

The allocation of the available investment capital between public and private uses is one of the challenges of the upcoming years. The traditional method of government acquisition of capital has been

through the use of its revenue income, taxing, and borrowing powers. This will probably not be enough. Better uses of existing financing methods and new approaches to the long-term financing of capital improvement will have to be attempted. Priorities of the local, state, and national levels for public works improvements must be considered. The inefficiencies and fraud that tend to waste public works money must be eliminated or reduced. The budget process must be disciplined and planned well into the future. Finally, a clear definition of what government agency, private corporation, or other party is responsible for which public facility must be made. This is especially important when the grey area involves two or more government agencies (28-31, 32).

The problem is real, the challenge has been given, the time is now. Actions are needed now if the rebuilding of America is to become a reality.

3.2 Financing Alternatives

The potential financing alternatives for public works capital improvements include tax-based federal, state and local funding, debt financing, user charges, and privatization. Substantial increases in taxes to finance public works projects may hinder private sector investment in an area. Using tax revenues without raising taxes would require reductions in other areas. Tax revenue use for capital improvement takes long-range planning to ensure that routine expenditures for services, maintenance, and daily expenses are not affected (28-34).

Debt financing, or the use of bonds to finance capital improvements, is an increasingly troubled method. Many municipalities are being forced out of the bond market because of the current high

interest rates and the expanded use of industrial revenue bonds. Small communities are finding that small bond issues have such high transaction costs, such as law fees, underwriting expenses, and printing, that they are effectively excluded from the market.

User charges are another traditional method of financing many public works services, and money from this source can be designated for capital improvement, renovation, or repair. User fees are directly related to the consumer and product. In many communities, user fees do not reflect the true cost of the service but are subsidized out of other funds. The raising of user fees is often difficult and traumatic to a community. Often special income adjustments are needed for the elderly and the poor.

The primary and final method of financing considered here is privatization, or private operation of traditionally public sector provided services and facilities. As defined privatization is the concept in which financing, construction and operation of public services and facilities that are traditionally provided and funded by government are shifted to the private sector.

The remainder of this report will expand the privatization concept, giving advantages and disadvantages of privatization, developing the privatization procedure and methods, looking at various approaches of several major corporations, analyzing the risk factor of privatization contracts, explaining the required contract administration for privatization projects and finally taking an indepth look at the McKay Bay Refuse-to-Energy Project at Tampa, Florida.

3.3 Alternative Ways to Provide Services

In the provision of services, three distinct entities must first be defined before alternatives can be discussed. First, the service consumer is the party who directly obtains or receives the service. This party is also often called the user or customer. Second, the service producer is the agent that actually and directly performs the work or delivers the service to the consumer. A producer can be a governmental unit or agency, an association of customers, a private corporation, a nonprofit agency, or even the consumer himself. Finally, the service arranger is the agent who assigns the producer to the consumer. Most often the arranger is a governmental agency. The arranger's responsibilities include the authority to levy taxes, assessments, or user charges; the establishment of procedures to select the proper service, including level of service and cost; and the monitoring of services provided (28-56, 57).

The alternative arrangements to deliver services follow:

*Government service is the delivery of services by a government agency by its own employees. The community or public agency acts both as the arranger and producer (28-58).

*An intergovernmental agreement allows a community or other public agency to pay or hire another government unit to supply a service. In Gainesville, Florida, fire protection and library services are provided to sections of the surrounding county by such an arrangement (28-58).

*Contracting or purchasing are two other alternatives for the procurement of needed services. Contracts can be made with other governmental agencies, private corporations, or

nonprofit organizations for the delivery of goods and services. A survey conducted of 2,375 cities that contract with private, profit-making firms showed an extremely diverse list of services available by contract from private firms. Table 3-1 lists 66 services which are an indication of the variety of services that can be contracted to private corporations (28-60).

TABLE 3-1. THE NUMBER OF CITIES USING PRIVATE FIRMS TO SUPPLY MUNICIPAL SERVICES UNDER CONTRACT

Service	Number of Cities Contracting With Private Firms
Refuse Collection	339
Street Lighting	309
Electricity Supply	258
Engineering Services	253
Legal Services	187
Ambulance Services	169
Solid Waste Disposal	143
Utility Billing	104
Animal Control	99
Planning	92
Water Supply	84
Mapping	74
Water Distribution System	67
Payroll	65
Street Construction and Maintenance	63
Hospitals	57
Special Transportation Services	49
Cemeteries	47
Microfilm Services	47
Nursing Services	34
Assessing	31
Public Relations	30
Bridge Construction and Maintenance	25
Industrial Development	24
Tax Collection	24
Mental Health	22
Sewage Disposal	21
Management Service for Publicly Owned Transit	18
Electrical and Plumbing Inspection	17
Libraries	17
Zoning and Subdivision Control	16

TABLE 3.1--continued

Sewer Lines	14
Treasury Functions	14
All Fire Services	13
Mosquito Control	12
Museums	12
General Development	10
Alcoholic Rehabilitation	9
Records Maintenance	9
Election Administration	8
Police Communications	8
Building and Mechanical Inspection	7
Fire Communications	7
Housing	7
Recreational Facilities	7
Personnel Services	6
Urban Renewal	6
Crime Laboratory	5
Irrigation	5
Parks	5
Traffic Control	5
Water Pollution Abatement	5
All Public Health Services	4
Juvenile Delinquency Program	4
Licensing	4
Soil Conservation	4
Civil Defense Communications	2
Fire Prevention	2
Noise Abatement	2
Patrol Services	2
Registration of Voters	2
Training of Firemen	2
Air Pollution Abatement	1
Jails and Detention Homes	1
Welfare	1

*Franchising is another means of providing services. The community or public agency awards a monopoly to a private corporation to supply a particular service which is usually regulated by the community or public agency. As in the contract service, the government is the arranger and generally a private corporation the producer. The main difference is that the government pays the private corporation for contract service while the consumer pays

for franchise services. Common franchises include telephone service and cable television (28-66).

*Grants are a subsidy given by the public agency to the producer, either by direct grants of money or tax-exempt status. The grant in effect reduces the cost of the service to the consumer who purchases the subsidized service from the producer. Universities, health facilities, cultural institutes, milk, and other farm products are some examples of grants (28-67).

*The voucher system subsidizes the consumer and allows him to exercise his option in the marketplace. Food stamps and rent vouchers are examples of this system. The producer is a private corporation and both the government and the consumer pay the producer (28-68).

*In the market system, the consumer arranges for service and selects and pays the private corporation producer. Although the community or public agency may establish standards, it is usually not otherwise involved (28-70).

*Voluntary service provides service needs in many communities across the nation. The volunteers or voluntary association arranges and produces the needed service. Volunteer fire departments constitute more than 90 percent of all fire departments in the United States (28-70).

*Finally, self-service is a means of obtaining a service. The consumer alone or his family arranges and provides the needed service (28-70).

The different alternatives for providing services are summarized in Table 3-2 showing the arranger, the producer and the payer in each alternative (28-73). Privatization, where a private corporation produces a service for the community or public agency, can be found in several of the arrangements shown.

TABLE 3-2. INSTITUTIONAL ARRANGEMENTS FOR PROVIDING PUBLIC SERVICES

Alternative	Arranger	Producer	Payer
Government service	Government	Government	NA
Intergovernmental agreement	Government #1	Government #2	Government #1
Contract	Governemnt	Private firm	Government
Franchise	Government	Private firm	Consumer
Grant	Government/ Consumer	Private firm	Government/ Consumer
Voucher	Consumer	Private firm	Government/ Consumer
Market	Consumer	Private firm	Consumer
Voluntary	Volunteer	Volunteer	Volunteer
Self-service	Consumer	Consumer	NA

3.4 Advantages of Privatization

The advantages of privatization draw upon the private sector's involvement in financing, design, construction, ownership, and operation of facilities. The benefits of financing and ownership enable a taxpaying corporation to be eligible for various tax benefits. These benefits, which must be considered on a site by site basis, include investment and energy tax credits, deductibility of interest, and accelerated depreciation.

Tax benefits which the private sector is capable of using include the following:

* Investment tax credit - 10 percent of eligible project cost

* Depreciation of machinery and equipment over five years

* Depreciation of structural components over 15 years

* Deductibility of interest expense

Privatization may provide as much as 100 percent funding for project construction costs, thereby preserving local debt capacity for other essential purposes. The federal grant program, in contrast, provides a percentage of funding for eligible costs only, and eligible costs are typically determined at the time a project is placed on a state priority list, not when construction costs are actually incurred. This time delay may significantly raise the local share. Often privatization transactions can be structured so that industrial development bonds for water, wastewater and waste-to-energy projects are given preferential treatment (14-1). The use of these bonds provides the private sector firm with an interest rate lower than it could obtain otherwise.

Another advantage for both the public agency and the private participant is associated with the design and construction of the facility. Unlike the federal grant programs with their often excessive requirements, privatization allows flexibility because federal and state regulatory involvement is minimized and certain public procurement regulations avoided. Some reports indicate that savings due to these factors may often exceed 20 percent of the estimated project cost (14-1). Another report states that savings due to the minimized federal and state regulatory involvement may exceed 30 percent of the estimated project cost. This second report by Arthur Young and Company indicates that the combined savings of construction costs and tax benefits could result in project cost

reductions of approximately 40 to 60 percent as compared with a publicly funded and publicly owned project (18-61).

Operation by the private sector may also lower costs and provide additional benefits. In many cases the private sector can operate facilities more efficiently than public agencies. Some communities have found it difficult to pay wage scales and career growth opportunities necessary to attract and retain highly technical and well-trained operators. Private sector corporations can often hire non-union employees where communities cannot. The less bureaucratic private sector can utilize greater flexibility in providing worker incentives. In addition, the private sector can experience significant economies of scale in the operation of multiple facilities. Factors include:

*Ability to share licensed operators among multiple plants.

*Ability to centralize or consolidate common services such as preventive maintenance, accounting and administration, laboratory services, and spare parts.

*Ability to bulk order chemical supplies and other essential common commodities.

*Profit incentive for cost efficient operations and search for revenue generating capability of treatment plant resources in addition to local user fees (14-1).

*Specialized skills that are necessary but used infrequently, can be shared by the various privatization projects of the parent private corporation, resulting in better service at reduced costs (12-94).

Privatization can be more efficient because it harnesses competitive forces and brings the pressure of the market place into the provision of services. It allows flexibility in adjusting the size of a program up or down in response to changing demand and changing availability of funds. It provides a quicker response to new needs, new technology, and new ideas. It often provides better trained, more efficient, more experienced management, free of community politics and pressures, to the facility. The result is a steady supply of the required services without the vacilation of local, state, or federal government (28-90).

Operation of services by the private sector limits the size of government. While this is most obvious in the size of the workforce for the community, the lessening of the political influence into the provision of services is also diminished. The result may well be a better, steady provision of services and a more efficient, less distracted local government, free to give its attention to other political and social matters.

3.5 Disadvantages of Privatization

The disadvantages of privatization can often be eliminated by the appropriate contract clauses at some cost to the community or public agency. During the decision making process, the community must decide which risks it will assume and which it will eliminate and work with the private corporation to achieve the desired contract. The disadvantages and possible risks of privatization follow.

A privatization project may cost more. Because the community or public agency must ultimately bear the cost of contract administration, monitoring costs, profits and fees of the private

participant as well as the cost of construction, financing, and operation and maintenance of the facility, it is sometimes argued that privatization can cost more than municipal delivery of services.

A privatization contract may result in poorer service for the community. It may be argued that since a private corporation's objective is to maximize profit, there is little incentive to maintain service, perform maintenance, or replace outdated or obsolete equipment. This can be overcome by a vigorous monitoring and inspection policy by the community or public agency during both the construction and operation phases of the contract.

Privatization contracts, like contracting of all types by a governmental agency, may increase the chance for corruption. As a community contracts more and more of its services, the possibility for conflict of interest, bribery, kickbacks, and payoffs become real problems. The best insurance against this type of corruption is open competitive bidding and tightly written and closely monitored contracts. Independent auditing of the private corporation's books for the privatization contract will ensure all funds paid are indeed for the project (12-96).

The possibility exists that a privatization project may fail to provide services throughout the life of the project. Corporations fail or curtail operations, either because of bankruptcy or other reasons. While a performance bond can help ensure that the construction phase will be completed, the best way to ensure that the entire privatization contract will be performed is to ensure during the vendor procurement phase that accurate detailed information is obtained on possible bidders. This information might include such

items as the private corporation's financial resources, past record on privatization and other contracts, status of contracts on hand, names and experience of principal individuals in the corporations' organization, and experience in construction, and operation and maintenance projects (12-96).

A privatization contract displaces public employees and draws opposition from municipal unions. Privatization has been slow to develop in heavily unionized areas of the country. Employee problems are less likely to occur when privatization contracts are used for new or expanded facilities and services. In some instances, the private corporation may hire those displaced or renegotiate union contracts (22). In other situations, union agreements with communities prohibit contracting services in which their employees work. In any case, the community must, early in the planning phase, discuss with employees involved the privatization concept and their potential future in the contract (12-97).

A privatization contract may present difficulties to communities or public agencies inexperienced in this type of contract. This problem, including drawing up an adequate contract, construction management, and monitoring and enforcement of contract requirements, may necessitate the hiring of a consultant or consulting firm to assist with the planning, project management, and contract enforcement.

Privatization may nullify the principle of merit employment of a community, bypass programs regarding veteran's preference in government employment, bypass equal opportunity legislation and hiring of handicapped persons. In doing this it may demoralize the remaining community's workforce. Privatization deprives the public workforce of

skills that may be needed in the future and can therefore be a debilitation of public government capability. The community must weigh this risk and others during the analysis process before committing itself to the privatization option (28-91).

The privatization of public services can limit the flexibility of the community or public agency in responding to emergencies. It can foster an undesirable dependence on contractors and leave the public vulnerable to strikes and slowdowns by contractor personnel. As the private participant becomes more established in the community, the provision of services may lead to an increased political power by the private corporation to the loss of the public agency or community (28-91).

A privatization contract may fail to guarantee adequate competition in certain areas. Privatization is still a relatively new concept and the resulting absence of effective competition in this field can drive up costs and lower the quality of the service provided. As time passes, this problem will correct itself but for the present the community or public agency must be aware of this risk element.

CHAPTER IV

PRIVATIZATION METHODS

4.1 The Arthur Young Methodology

For privatization to work best, it must be closely monitored and inspected from the conceptual stage through implementation. To assist local and state public agencies and governments in evaluating and implementating privatization, a consulting service methodology has been developed by the Arthur Young and Company, a member of Arthur Young International. Arthur Young is an organization that provides audit, tax, and management consulting services. Arthur Young often contracts with communities and public agencies to assist in the management of their privatization contracts. Their methodology involves working with the community's engineering, legal, and financial advisors and drawing upon existing studies and insights of the current local situation. Starting with an evaluation of needs and the technologies available to satisfy them, the potential market of qualified private organizations is identified for evaluation by the community. Laws and statutes affecting privatization are reviewed as are the related regulatory requirements, community impact, and financing approaches (15-337).

The Arthur Young methodology is made up of four processes. As shown in Figure 4-1 these processes include the analysis process, the

decision making process, the vendor procurement process, and the implementation process (20-9).

The analysis process has seven key areas. The first area of the process is a determination of the community's needs and is followed by area two, a determination of the technologies to meet those needs. The third and fourth areas are associated with the business opportunity of privatization. The market survey, area three, is utilized to develop a list of potential qualified private sector corporations for privatization. In area four, secondary impact evaluations include an evaluation of possible project revenue, and any other positive or negative aspects of privatization. The fifth area, the financial alternatives survey, then compares conventional financing for the project, such as general obligation and revenue bonds and grant funding, to the different types of privatization options. Paragraph 4.2 presents the most common privatization options used today. The remaining two steps are institutional factors and regulatory interfaces (14-1, 2).

The second process, the decision making process, follows once the feasibility of privatizing a project has been established. During this process alternatives are developed and the alternative best meeting the needs of that community is chosen. Plans are then made to implement the alternative chosen. During this process the community should establish a system of checks and balances covering all phases of the privatization project (14-3). This is covered in paragraph 4.3.

The third process, the vendor procurement process, may be either negotiated or competitive. Here the community or public agency may

OVERVIEW: AY/ PRIVATIZATION™

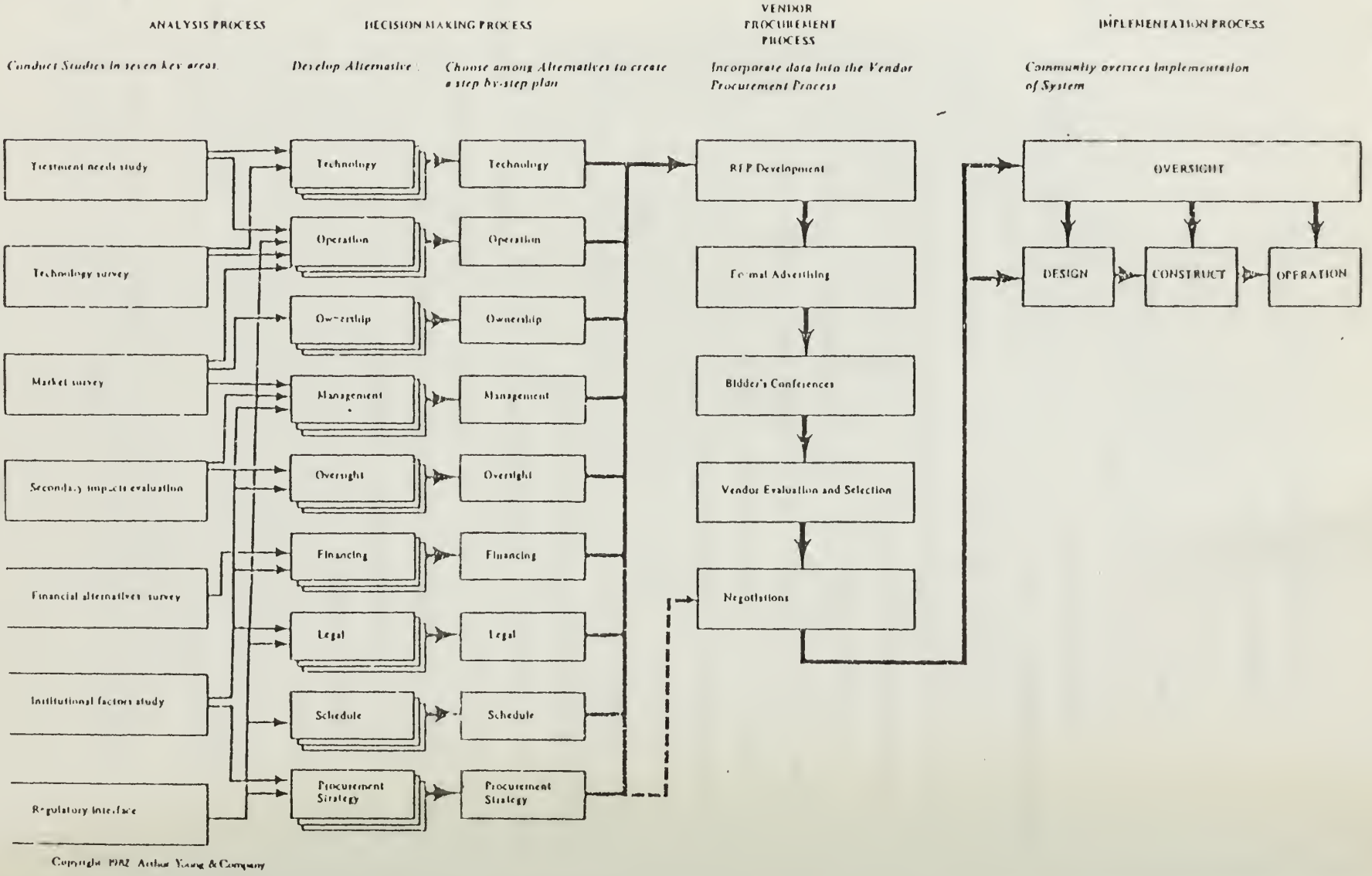


FIGURE 4-1

negotiate a privatization contract with a specific private sector corporation or issue a request for qualifications or a request for proposals. The public can then choose among the several responding corporations (14-3).

The final process, the implementation process, includes the design, construction, and operation phases. A system to oversee this implementation must be developed to ensure compliance with contract clauses (14-4).

4.2 Privatization Options

The economic benefits of privatization depend closely on the structure of the transaction between the government agency and the private participant. There are numerous options available for this privatization transaction and while variations are sure to exist, only the primary basic models will be described. When choosing which option it will use, the community or government agency must first determine its financial position, the consumer's needs and financial position, and the climate available at the locality for private investment. All three must be analyzed in detail to determine which option is best for the individual community. The options are as follows:

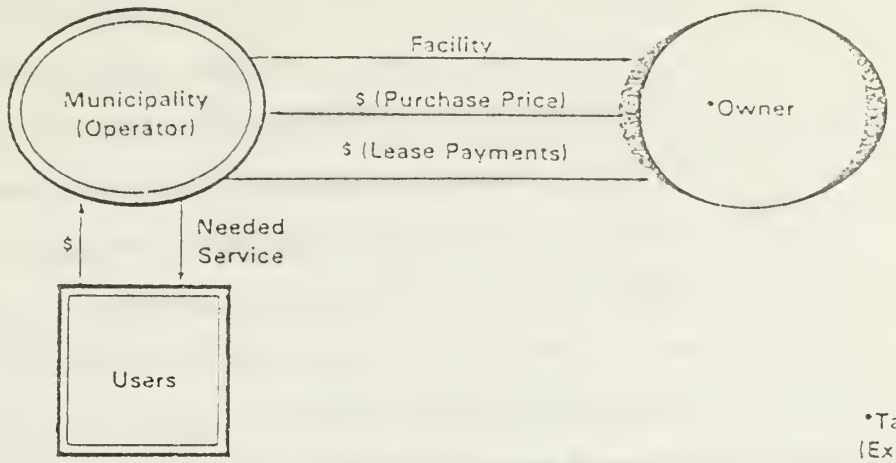
*Sale/Lease Back. As Figure 4-2 shows, in this option the community or government agency designs and builds the facility and enters into a traditional sale/lease back contract with a private corporation or limited partnership. The public organization sells the facility to the private participant and leases it back from that private participant. The user's interrelationship remains with

the public agency. The private participant receives the depreciation tax benefits, the agreed compensation for use of the facility, and retains rights of inspection. The public agency has the right to free use of the property free from interference by the private landlord as long as the user does not violate the law or a provision of the lease. While taxes and assessments are normally paid by the landlord, this could be shifted to the public agency as tenant as part of the lease agreement if desired (38-210).

*Sale With Operating Contract. Figure 4-3 shows the privatization option which is similar to the sale/lease back but with private involvement in the operation of the facility. The private sector participant thus becomes eligible for all tax benefits, including the investment tax credit. The lower costs resulting could then be passed to the users through lower fees. In this option the community or public agency designs and constructs the facility and enters into a sale/lease back contract with the private participant. The user receives the needed service from the private participant as operator and provides user fees to the public agency which in turn pays a service fee to the private participant.

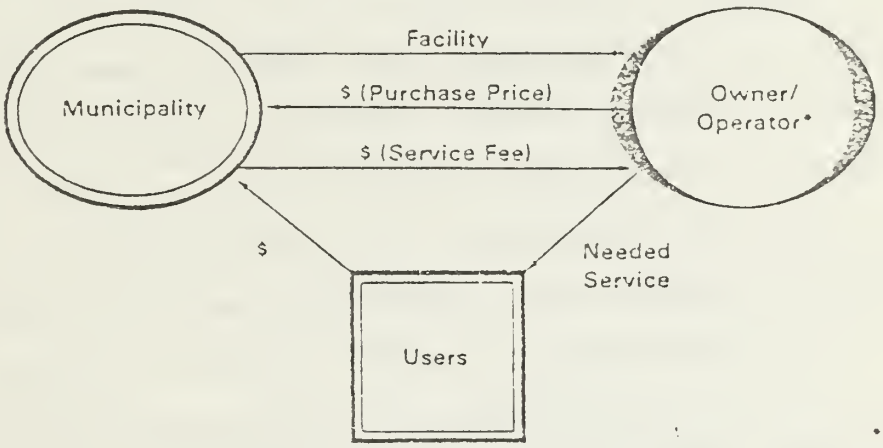
*Turn-key or Full Service Agreement. As shown in Figure 4-4, the full service or turn-key approach is the third option. Here, the private sector participant finances, designs, builds, and operates the facility,

FIGURE 4-2 Sale/Leaseback



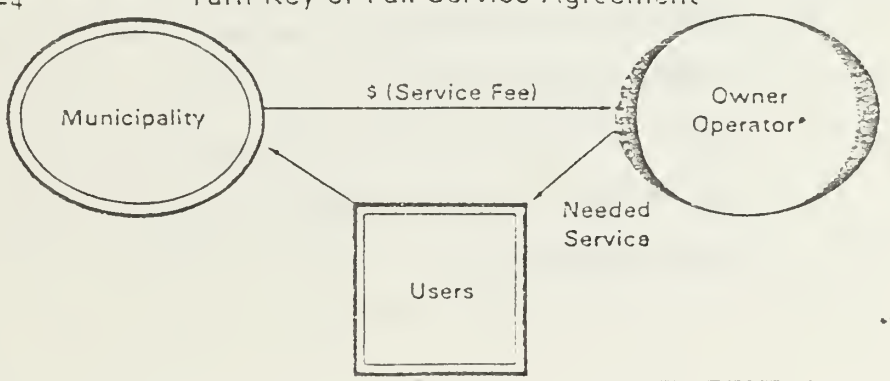
*Tax Benefits (Excluding ITC)

FIGURE 4-3 Sale With Operating Contract



*Tax Benefits

FIGURE 4-4 Turn Key or Full Service Agreement



*Tax Benefits

bringing construction savings into the transaction. The private firm realizes all the tax benefits, including the investment tax credit (14-3). The construction savings result from construction management experience, profit motive, operation and maintenance experience, and minimized federal and state regulatory involvement. See Section 3.4 for further advantages. The user receives the needed service from the private participant as owner and operator and provides payment as a user fee to the public agency who collects the fees and pays to the private firm an agreed upon service fee. A twist of this option and the more common arrangement requires the community or public agency to repay the entire cost of the facility, including finance costs, temporary finance costs, construction costs, engineering costs, and bonding and insurance costs over the life of the contract in addition to the service fee. The cost of the facility, called the project cost, is paid in equal annual installments and is prearranged by contract. The facility is owned by the private participant. Construction costs are minimized by the private corporation's experience, profit motive, operation and maintenance experience, and minimized federal and state regulatory involvement. The user receives the service from the private participant and pays user fees to the public agency wich pays an agreed upon service fee (22).

A financing modification that is popular is one where the community or public agency funds part of the facility with traditional bonds while the private participant funds the remainder. The privately contributed funds are recovered by the private corporation as part of the service fee charged to the government over the life of the contract. Other aspects of the contract are similar to the turn-key agreement option.

4.3 Checks and Balances

As with any contract, there will be some risks involved in privatization contracts. Privatization, as a partnership between the public and private sectors, should be a sharing of both the benefits and the risks. Risk management is covered in detail in Chapter V of this report. What is important here is that once the risks have been divided or shared, it is in the best interests of contract parties to ensure that the contract clauses reflect the division of risks as agreed to, that the contract clauses covering those risks have rewards and penalties to help ensure compliance, and that a system of checks is devised to ensure the participants conform with the contract clauses.

The community or public agency should not feel that contracting services from the private sector diminisnes their control and authority over those services. Although they may no longer be producing the service, they are still providing it and by ensuring the contract properly meets their needs and desires, and by developing an appropriate inspection program, the community or public agency can still retain control over the provision of the service.

The inspection program should be delineated in the contract between the public and private sector participants. This program might include such items as independent design review, independent construction monitoring, independent operational audits, independent financial audits, independent monitoring of production results, conformance with federal and state regulations, and consideration of performance incentives and penalities. The contract must include the appropriate penalties, including conversion to government ownership, for performance failures. The facility must be designed and equipped for long-term reliability. It is important that the community or public agency ensures that normal preventive maintenance is performed, especially as the contract approaches its end. Care in contractor selection and vigilance in writing the contract and supervising compliance cannot be overemphasized.

Privatization does not relieve local officials of their responsibility for providing their citizens with service that complies with state and federal regulations, protects the public health, and is not disproportionately costly.

4.4 Request for Proposals

The most complex task for the community desiring a privatization contract is in organizing the request for proposals (RFP) to be issued to the private sector. The local community or public agency requires certain guarantees and assurances from the private corporation in regard to continuity and quality of service. The initial request for these guarantees and assurances is made in the RFP. The time and effort that a community devotes to developing its RFP will be evidenced in the quality of the proposals it receives.

In most cases it is advisable to seek the assistance of a national management consulting firm with experience or knowledge of the privatization concept. The consulting firm can assist the community or public agency in developing the request for proposals, in establishing private sector corporate qualification criteria, in selecting the private corporation, and in the negotiation process with the private corporation.

The request for proposals should be carefully designed to give all prospective private corporations a basic amount of information so that all proposed plans are founded on common criteria. The more information that can be provided, the better the proposals received will be. A typical RFP might include an introduction letter plus sections on the owner's basic criteria, the proposed work plan, technical aspects, and financial aspects of the privatization project (2-148).

The introduction letter, or letter of welcome, should describe the interest the community has in privatization and summarize the needs of the community as well as opportunities of the potential private sector participant. A brief discussion of privatization, the methods of implementation, any options possible, financing arrangements, and benefits should also be included to educate and possibly widen the field of potential bidders.

Section 1 might include pertinent current information about the proposed project as developed from the community's feasibility study or other preplanning information. Such criteria would include the following (14-5, 15-337, 2-148):

Background data on the local area including local demographics, economics and population trends

Feasibility studies conducted

General layout and drawings showing any existing facility

Specifications and design criteria

Environmental and aesthetic specifications

Acceptable technological approaches

Permit and compliance standards

Design schedule requirements

Project completion requirements

Location

Designer name and address, if not part of the privatization contract

Anticipated interfaces with the community and regulatory bodies

Cost estimate

Section 2 might provide information needed by the prospective private sector participant for the development of a proposed work plan. The purpose of this section would be to give the corporation an understanding of the project requirements and allow considerable leeway for his ingenuity and skill in developing a preliminary work plan for implementing the requirements. Items which might be included in this section are (14-5, 15-337, 2-149):

Construction management requirements

Operation and maintenance management requirements

Required reporting and control systems

Required qualifications for bidders

Schedule requirements

Audit and control requirements

Customer, labor and supplier agreements

Regulatory matters

Required guarantees and warranties

Governing statutes

Key contractual considerations

Methodology to resolve unanticipated events

Proposed project organization

Section 2 could further request that the prospective private sector participant provide the following information as part of its proposal (2-148, 149):

Description of approach

Services to be provided from the home and field offices

Proposed contract package

Preliminary equipment procurement schedule

Proposed value engineering program

Preliminary construction schedule

Proposed organization for construction and operation

Experience in privatization and resumes of key employees

Section 3 might require information from prospective participants to demonstrate the corporation's knowledge and ingenuity in developing a program to implement the stated requirements. Key questions should be asked to determine the technical experience, understanding, ingenuity, practicality, and technical skill of the corporation (2-149). Information requested might include:

Experience on similar projects

Current workload

Method used for control of costs

Method used for control of schedules and progress

Past record of value engineering success

Outside consultants expected to be utilized

Quality management program

Safety program and record

Operation and maintenance records from previous contracts

The final section might require the prospective private sector participant to propose its plan for financing the project, listing all costs and fees. In this section the community or public agency would give alternatives developed during the feasibility studies and would state any limitations. The community should state its financial condition and its willingness and ability to finance any part of the proejct. Any restrictions to privatization would be included in this section (2-149).

4.3 Privatization Examples

A survey of major contracting companies as designated by Engineering News-Record (34) and one major underwriter of privatization contracts has revealed various methods of accomplishing this type of contract. The results of the survey are included as a part of this report in Appendix A. Several examples are provided below to give a practical view of the points presented in this report. It must be pointed out that while the statements for each example are specific, in actuality the contract clauses would undoubtedly vary from one specific project to the next. Most companies are flexible and will adjust their positions in order to please their customers, within reason. All companies unsurprisingly reported that profit was

their underlying motivation for being involved in privatization. The examples follow.

4.5.1 Research Cottrell, Inc.

Research Cottrell, a subsidiary of Metcalf and Eddy, has been involved in privatization for approximately six years. Its purpose in entering this field was purely profit motive. Presently Research Cottrell, Inc., is involved in the privatizing of water systems, wastewater systems, and refuse-to-energy systems. The company's primary underwriter for these projects is Shearson Lehman American Express, one of the growing giants in the field of finance. Presently two projects are under contract, both involving wastewater treatment. One is located at Auburn, Alabama and the second at Norco, California with a combined contract value of $50-60 million. The company's home offices are located in Somerville, New Jersey.

Research Cottrell uses a modified turn-key or full service agreement option as the basis of its privatization contracts. Financing, temporary financing, construction, engineering, design, and operation and maintenance are all accomplished by them as the owner/operator private participant. The modification is that the cost for the design and construction phase, known by Research Cottrell as the project cost, is passed back to the community or public agency through a series of equal annual payments. Thus, the public agency receives services without using its own bonding capacity. In addition to this project cost, the community or public agency pays a service fee to reimburse the private participant, Research Cottrell, for operation and maintenance cost plus profit over the life of the contract. Contract lives are typically 20 to 25 years.

On privatization contracts, Research Cottrell generally states in the contract the service fee to be paid by the community or public agency for the first year. Additional years have cost tied to the Consumer Price Index. Utility costs are included in the service fee and a separate utility contract is not used. Any taxes, fees, or leasing costs are passed to the public agency as a part of the service fee. Users receive the service directly from Research Cottrell and pay their monthly bill to the public agency which in turn pays the service fee. The project costs and service fees are guaranteed for the life of the contract. The community or public agency in turn guarantees the quality and quantity of influent to be delivered to the facility, in this case to wastewater treatment plants.

Research Cottrell guarantees site access and allows inspection both during construction and throughout the life of the operation and maintenance contract. Contract clauses require facility compliance with all federal, state, and local regulations. City inspection is expected by the private company to insure contractor compliance.

Presently the workforce for Research Cottrell's privatization projects is nonunion. If city or county employees are disolaced by the private corporation, Research Cottrell's policy is to hire these displaced workers to fill similar roles in the corporation. If an existing union is in place, the corporation will renegotiate the union's contract. The construction phase, generally contracted out by Research Cottrell, may utilize union labor as desired by their construction contractor.

Upon expiration of the privatization contract, the contract may be renewed if desired by the community or public agency and if the option to renew was included in the original contract. If not renewed, the facility reverts back to the community or public agency at fair market value (22).

4.5.2 Daniel Construction Company

Daniel Construction Company, a subsidiary of the Fluor Corporation, Irvin, California, is new to the field of privatization. Its expressed purpose in entering this new field of construction is an attempt to be competative with other corporations on projects for communities with funding problems. The Daniel Construction Company hopes that by arranging financing as part of its construction service, it can induce communities to attempt projects they normally would not have undertaken using traditional financing methods, and that Daniel will be selected to perform the project. The company's interests lie in both municipal power generation and wastewater treatment. Financing is arranged by Daniel who uses its AA credit rating and $3-4 billion in assets to secure and guarantee loans for the community. Presently Daniel Construction Company is negotiating with the community of North Little Rock, Arkansas, for the construction of a hydroelectric plant.

Daniel Construction Company uses a modified turn-key or full service agreement option as a basis of its privatization contracts. Financing, temporary financing, design, engineering, construction, operation, and maintenance are all accomplished by them as the owner/operator private participant. Daniel's modification, like Research Cottrell, passes the construction costs back to the community. The finance, design, engineering, and construction costs

are added to the operation and maintenance fee to get a single service fee. On this hydroelectric plant project, Daniel further requires the community to purchase all power produced at market value. The contract life for this project is 15 years.

The service fee would generally be stated in the privatization contract for the first year. In further years the service fee would equal the city's debt service and cost of operation and maintenance plus a fee or profit. Utility costs, any fees, taxes or other costs would be included in the contract and the cost borne by the community. In the hydroelectric power plant project the community purchases the product for later sale to users. Users pay the community for power used.

The Daniel Construction Company allows site access and inspection by community employees throughout the life of the contract. Monitoring by the community or public agency is expected.

The Daniel Construction Company is presently a nonunion corporation. If city or county employees are displaced by the private corporation, Daniel's policy is to hire these displaced workers to fill similar roles in the corporation. If an existing union is in place, the corporation will renegotiate the union's contract. Construction is accomplished by Daniel's nonunion construction forces.

Upon expiration of the privatization contract, the contract may be renewed if desired by the community or public agency and if the option to renew was included as an original contract clause. If not renewed, the facility reverts back to the community at fair market value (5).

4.5.3 Signal RESCO

In the area of privatization, the leader to date has been Signal RESCO (Refuse Energy Systems Company), formerly Wheelabrator-Frye, a member of the Signal Group of companies. It has a major enginering organization in the form of Rust-Kellogg, Inc. Signal RESCO currently has full service commitment on five waste-to-energy projects with a total value of $788 million. They are located in New York (2), Maryland, Florida and Massachusetts.

Other Signal Group privatization projects include a 7500 kw cogeneration plant in Placerita, California by Signal's Wheelabrator-Frye and Garret Corporations, the Paraho-Ute Oil Shale Project in Maine by Signal's Kellogg Rust Synfuels, the Northern Peat Energy Projecs in Maine by Signal's Kellogg Rust Synfuels (engineering and construction) and Wheelabrator Clean Fuels, Inc, (operation), and a 2268 TPD Methanol Plant in Cabo Negro, Chile by Signal's Wheelabrator-Frye (finance and operation) and Kellogg Rust (construction). Though cancelled in 1984 due to budgetary constraints and world-wide oil glut, Signal's Wheelabrator-Frye was the lead member of the partnership to build a $500 million 20 MTY coal export terminal in Staten Island, New York.

Signal's approach is to establish a single purpose subsidiary created solely for a given project. This subsidiary may represent one or more of the Signal companies depending on need. This subsidiary serves as the general contractor, owner, and operating company. Signal uses the turn-key or full service agreement option with one significant variation. It provides construction funds for approximately 20 perent of the capital requirement of the project with the remaining 80 percent being funded by the traditional

tax-exempt debt. Signal's investment is recovered through operating fees collected from the consumers. Signal guarantees the capital cost of the facility, and obligates itself in its contracts to provide unlimited additional funds necessary to complete the project to an operational condition and to pay debt service for any unexcused delays. A similar guarantee also covers the service period of the contract.

Signal's operating and maintenance contracts generally cover 15 to 20 years. Tax ownership of the facility during the life of the contract resides with Signal. On a typical waste-to-energy project, the government has an ongoing commitment to provide waste to the project at minimum established quantities for a set tipping fee. The electrical power or steam output generated by the facility is then sold by Signal for its own account, with possible revenue sharing with the government (3).

4.5.4 Bechtel

Bechtel has not to date participated on a privatization project except as a contractor for the construction phase. They have submitted proposals on two projects, one in partnership with Waste Management, Inc. in Broward County, Florida, and the other in conjunction with Consumat Systems, Inc. and Sumitomo Corporation of America in the Virgin Islands. Bechtel's stated purpose for developing the privatization option is so it can compete and maintain a strong position in the waste-to-energy market, an industry where privatization has been used most often. Bechtel's home offices are in San Francisco, California.

The Virgin Islands project consists of two solid waste resource recovery and desalination plants, one located on the island of St. Croix, the other on the island of St. Thomas. The plants will each produce 650,000 gpd of desalted water by burning 150 tpd of waste. The client is the Virgin Islands' Department of Public Works. Total capital cost of the projects, including financing costs, is approximately $59 million, with engineering, design, and construction making up about $38 million of that figure.

To perform the project, Bechtel intends of form a joint venture with Consumat Systems and Sumitomo Corporation of America to design, construct, own, operate, and maintain the plants. Consumat is the incinerator manufacturer and operator. Sumitomo, a subsidiary of Sasakura Engineering Company, Ltd. of Osaka, Japan, is the desalting equipment supplier. The joint venture will lump sum contract with Bechtel to construct the plants and provide performance guarantees and will contract with Sonsumat to operate and maintain the facilities over the 15 year period of the contract with the government.

Under this arrangement, the government will be obligated to deliver waste to the facilities at a guaranteed level and will agree to purchase potable water at a predetermined quantity. The tipping fee for waste and the purchase price for water will be determined by a cost reimbursable formula designed to compensate the contractor for all project financing, maintenance and operating costs, and a reasonable profit. At the end of the fifteen year operating term, the government can purchase the facility from the joint venture for fair market value or renew the service agreement.

Financing for the project is to be obtained from two sources. Limited obligation tax-exempt industrial development bonds having a maximum term of 15 years will be issued by the Virgin Islands Public Works Acceleration Authority for approximately 80 percent of the total capital cost. The joint venture will provide the remaining 20 percent. The joint venture expects to obtain their 20 percent by means of a third party leveraged lease. During the construction period, however, the joint venture may finance construction entirely with short-term tax-exempt notes or tax-exempt commercial paper issued by the Authority. Upon completion of construction and demonstration of performance, the joint venture will transfer its interests in the facilities to a third party lessor and will enter into a lease back for the operating period. The lessor's equity will be used to pay part of the short-term debt with the balance converted to long-term debt. As previously stated, the fee charged the government for the services provided will cover all costs plus a reasonable profit. Lehman Brothers Kuhn Loeb is the financial advisor for the joint venture (3, 8).

4.5.5 The Parsons Corporation

The Parsons Corporation, Pasadena, California was a pioneer in the field of privatization as the sole financer of a 5 mgd advanced wastewater treatment plant for Chandler, Arizona. Parsons, ranked fifth on ENR's 1984 Top 400 contractor list with $4.3 billion in new contracts, is financing the project with $22.9 million in industrial revenue bonds issued as tax-free, floating-rate securities sold to institutional investors by E. F. Hutton and Company, Inc., and by Chandler's financial adviser, Boetcher and Company, Inc. The 25 year

bonds, corresponding to the 25 year service contract life was backed by a letter of credit from the Bank of America.

The Parson's Corporation will provide engineering and construction management on the project while its subsidiary, Parsons Municipal Services, Inc., will perform the operation and maintenance phase and ensure effluent quality. Another Parson's subsidiary, Engineering-Science Cos., Arcadia, California, will do design reviews and construction inspection. The plant is scheduled for completion by the end of 1985. The effluent will be sold by Parsons Municipal Services, Inc. for agricultural use. This fund plus the service fee paid by the city covers financing, construction, operation and maintenance, and profit (25-24, 25).

4.6 Viewpoint of a Major Underwriter: Prudential-Bache Securities

As a major underwriter of construction activities, Prudential-Bache Securities has shown a growing interest in the concept of privatization, especially in the areas of water and wastewater facilities. It is believed that their viewpoint on the subject of privatization is indicative of other underwriters in this market.

Prudential-Bache believes that the economic advantages of lower initial capital costs and controllable long term costs under privatization are apparent, as are the non-economic advantages such as assured system performance. Both quantitatively and qualitatively, municipalities can benefit from privatization.

The principal benefits are economic. Under privatization, a facility could be built on a fast track turn-key basis, which would lessen the effects of inflation on construction costs.

Prudential-Bache is of the opinion that facilities could be built on a turn-key basis for guaranteed not-to-exceed prices which would be less than traditional bid based construction.

Under a long term service agreement, the private operator of the facility would charge the munipality a service charge based on debt service and operation and maintenance costs. Because the investment of equity would reduce borrowing needs, the debt service portion of that charge, a constant yearly amount, would be significantly lower than that of conventional financing. The agreement would set the first year operating cost and the conditions for adjusting this cost over time. Because debt service would be constant, and the operating costs charged only for specific reasons established in the agreement, the service charge would be controllable and predictable over time. If these costs exceeded stipulated levels due to management inefficiency, the operator would absorb those costs. In effect, the community can be shielded from the economic consequences of bad management. The efficiency of experienced private operation should be reflected in lower first year costs and consequently lower future payments.

Financing for both privatization and conventional means use the same basic financing vehicle, the tax-exempt revenue bond. Using a $15 million system as an example, under conventional financing, the entire construction cost would be financed by a revenue bond issue. Construction costs, plus financing and issuance costs, would result in a $20,800,000 issue. Assuming a 10 percent bond interest rate, annual debt service over the 20-year contract life would be $2,237,500.

Under privatization, the private owner would invest equity in the project, usually 25 percent of project costs. This would result in the need to finance only 75 percent of project costs, producing a bond issue of $14,270,000. With a 10 percent interest rate, annual debt service over the 20-year contract life would be $1,571,000. The savings on this cost element can have a significant effect. In this example, the nearly $700,000 in annual savings would, over the 20-year term of the debt, generate a savings to the community of $14 million (26-1). With greater investment by the operator, the savings to the community becomes even more significant.

There are other benefits of privatization recognized by Prudential-Bache. The service agreement would include performance standards that the operator would have to meet. If due to operator fault the plant could not operate at stated capacity or within required limits, the operator and not the community would be subject to penalties or damages which resulted. The community is assured of long-term guaranteed operation and performance of the facility by the private operator.

The actual security and credit support structure of a privatization contract is virtually identical to that of a conventional transaction. Prudential-Bache claims that market acceptance of privatization is high and that project bonds can be sold.

Both privatization and conventional financing require a rate covenant by the community, a debt service reserve fund the maintenance of a specified debt service coverage ratio, and the collection of service fees by the community. Generally the debt service coverage ratio would require that net revenues be equal to

125 percent of debt service. This would be achieved by adjusting user charges under the rate covenant. The reserve fund would equal one year's principal and interest, and would be established from bond proceeds. Given these security elements, the financing would be eligible for bond insurance.

Prudential-Bache believes that with the use of the traditionally accepted security and credit mechanisms, investors will view privatization projects as simply another investment choice. The interest will center not on this new method of financing but rather on traditional questions of risk. Fields such as waste-to-energy or cogeneration, which involve new technologies, are considered as risky, while water or wastewater privatization projects are seen as having little risk.

Prudential-Bache assures its investors that the involvement of private parties in development and operation will not dilute ultimate public control over these projects. Adequate safeguards and control mechanisms can be incorporated in financing and service agreements to assure the proper protection of the public interest in the long term operation of a project. Although the community would be relieved of day-to-day construction and operation responsibilities, it would not relinquish control or its capability to protect the public interest. Enforcement would be exercised through various agreements including the ground lease, the financing agreement, and the service agreement. The ground lease would set site occupancy and facility construction requirements, establish provisions related to completion and start-up and provide a means for eventual community aquisition of the facility. The financial agreement would include provisions related to debt

retirement, financial covenants, default and remedies, and foreclosure under certain default circumstances. Finally, the service agreement would specify the operator's cost and performance requirements and guarantees, such as production rates and standards, and specify any penalties or damages.

Prudential-Bache Securities believes that privatization has a good future and is interested in being a part of this new method of financing public works facilities (26).

CHAPTER V

RISK MANAGEMENT

5.1 Introduction

Risk management is defined as a comprehensive approach to handling exposure to loss. Any event that contributes to financial loss of the business venture is subject to risk management. The following three steps are used by some companies to manage the risks they encounter.

*Recognize and identify the risks that apply to the privatization contract. These may arise out of contract wording, site conditions, uncertain economic future, changes in law, or changes in consumer habits.

*Control those risks once they have been identified. A decision must be made whether to assume the risks, transfer the risks to another party through some contractual agreement, or share the risks with another party. An alternative procedure may also be developed to eliminate the risks. Other choices include insurance against loss, self-insurance, or any action to minimize the effect of loss.

*Develop a project-wide program of loss prevention and control. Safety programs, quality management, and good communication are essential to controlling losses (10-130).

Construction work is risk intensive. The possibility [illegible] throughout the contract life is real and must be thoroughly analyzed. In the privatization contract, the risks are multiplied because the contract life often spans a time period of 20 to 30 years. Foreseeing events that far in the future is often extemely difficult. Indeed, the very assumptions which controlled the decisions that led to the particular privatization project may have changed drastically. Laws change, user needs change, the economic climate changes and maybe most importantly, technology changes. What is state of the art today may be obsolete tomorrow. These risks and others must be considered when developing the privatization contract.

The remainder of this chapter presents financial risk factors, some elements of each factor, and the major requirements for a successful privatization project. Various management strategies for controlling the risks will be covered.

Basic economics teaches that cost plus profit must equal the income needed or:

$$Ca + Co + P + R = Ia + Is$$

where Ca = annual capital cost

Co = annual operation and maintenance cost

P = profit

R = Debt Service Reserve Fund

Ia = annual income from user fees

Is = annual income from sale of any output

When analyzing the viability of a project, whether from the point of view of the investor, the public, or any private sector participant, the economic projections for each of the variables in the

above equation must be determined. Potential investors must be satisfied that the projections of revenues are sufficient to provide payment for debt service as well as operation and maintenance expenses. The public also requires that user fees be as low as possible. Thus it appears that both the public as well as the private participant are concerned with the projection. The events which affect these projections are the risk elements (6-8.16).

5.2. The Risk Factors and Elements

5.2.1 Capital Cost

The major risk elements which affect the capital cost of the project are (6-8.17):

*Delays in project completion resulting in delay in revenue receipt and exposure to inflation.

*Capital cost overruns.

*Additional capital investment needed after start of construction to meet operating performance.

*Legislation affecting operation of the facility.

*Change in user needs or desires.

*Unexpected damage by natural events.

5.2.2 Operating and Maintenance Cost

The major risk elements associated with operating and maintenance cost are (6-8.17):

*Excessive downtime or technical failure.

*Underestimation of labor, materials, utilities, replacement parts, repair requirements, or transportation costs.

*Changes in input composition, as in the case of wastewater treatment, sewerage, or refuse management.

*Increase in taxes or change in tax laws.

*Increase in insurance premiums.

*Changes in legislation.

*Unexpected major damage from natural events.

*Inability to meet regulatory requirements, overcome site restraints, and other environmental issues.

*Poor project management.

5.2.3 Income

The risk elements associated with project income are (6-8.18):

*Changes in input composition, as in the case of wastewater treatment, sewage treatment, or refuse management.

*Overestimation of project production.

*Inability to meet specifications.

*Fluctuations in the price of energy.

*Fluctuations in the price of commodities.

*Adverse changes in the financial condition of purchasers of any commodities produced.

*Changes in legislation.

*Shortfalls in user needs and therefore input quantities.

*Excessive operation and maintenance costs.

*Competition.

*Changes in user habits and needs.

*Changes in the economy.

*Changes in population trends.

5.3 Considerations Concerning Risk Management

In determining their position towards risk assumption, the public and private participants should first give consideration to the following requirements for a privatized project (6-8.19):

*A strong credit must in some way back the project. This credit backing may be provided by the public agency involved or by a private participant. While the credit may be limited to the construction or even part of the construction rather than the life of the project, optimistic financial projections alone are not sufficient to back a project.

*Adequate capital must be available to engineer, design, construct, and start up the facility.

*The facility must be guaranteed continuous usage over the life of the indebtedness.

*Markets for any product produced must be secured and assured at a price consistent with financial projections.

*The expertise of the designer and contractor should be well established.

*There must be assurance that the facility will be reliably operated and maintained over the life of the contract. Lenders must be confident of repayment of loans.

*The revenues gained from users and sale of any by-product must be sufficient to pay for operation and maintenance, debt service coverage, and any profit to the private participant.

*An adequate insurance program must be maintained.

*Required permits and government approvals must be available when necessary.

*Compliance with local, state, and federal regulations must be assured throughout the life of the project.

5.4 Risk Allocation

Once the risk factors and elements have been identified, each element must then be allocated to one party or the other, either to a public agency or a private sector participant. Risk allocation is an extremely important decision process and must be completed even before the request for proposals is made public. The decision itself often requires an extended period of time involving public meetings, research by committees and subcommittees, and even public referendums. In any case this decision should not be entered into lightly, without thorough research, or without careful projection of the effects during the intended life of the project (10-130).

5.4.1 Capital Cost Risk Allocation

The risks here concern any delay in revenue flow, timely completion of construction and any effects a delay might have, any overruns which may occur, and any new legislation which may affect either construction, production, or the life of the project.

Total public sector assumption of capital cost risks is an extreme example of risk assumption. Total protection of investors against this risk requires the public agency to provide guarantees that project completion will be timely, that funds are available to cover any problems which may arise, and that all debt service money is available at all times. There is in this agreement total protection

for investors against loss. The public agency can protect themselves by requiring payment and performance bonds, ensuring only competent contractors and engineers are hired, and having proper insurance covering loss.

The other extreme of risk assumption is total private assumption of capital cost risk. Under this condition the private participant assumes total risk and gives a guarantee to any investors and to the public sector for timely delivery, proper management, and meeting specifications. The private company's role may be that of investor, builder, manager, or all of these.

A modification of total private assumption and total public assumption is a shared assumption of capital cost risk. Table 5-1 presents three scenarios for capital cost risk sharing (6-8.20). The public agency is the arranger, the private corporation the producer.

TABLE 5-1. CAPITAL COST RISK SHARING

Risk element	Risk assumed by:					
	Scenario 1		Scenario 2		Scenario 3	
	Public	Private	Public	Private	Public	Private
Delays	X			X	X	
Overruns	X			X		X
Achievement of operating performance		X		X		X
New legislation	X		X		X	

Under scenario 1, the public sector guarantees the time for completion and the total cost of construction. The public agency would protect itself with liquidated damage contract clauses with contractors, but the risk is the public's responsibility. The private sector would guarantee conformance with the plans and specifications. The risk of new legislation is totally a public sector risk in this and all scenarios.

Scenario 2 passes all risks except new legislation to the private sector. The private corporation would guarantee a timely delivery, within cost, and meeting required specification, of the facility. Under privatization, the private company in this scenario would finance the entire operation and be responsible to the public for delivery of a working system. All risks except any changing legislation would be borne by the private corporation.

Under scenario 3, the private company is operating under a fixed price contract guaranteeing any cost overruns and conformance with specifications. The public agency assumes the risk of delay, accepting the cost of delayed availability of the facility and granting time extensions to the contractor as necessary.

5.4.2 Operation and Maintenance Cost Risk Management

The risks here involve increases in operation and maintenance costs above projections which result in increased user costs or increases in price of any commodity produced. For privatization projects, the operation and maintenance contract duration is often 15 to 20 years long, so that extreme care is necessary when allocating these elements of risk.

Total public sector assumption of operation and maintenance cost risks requires the public agency to operate the facility in a reliable manner assuming risks such as technological changes, changes in energy costs, changes in legislative and environmental legislation, competition, and proper project management. Losses and the inconvenience of excessive downtime or maintenance problems would be borne by the public agency.

While the cost would probably be prohibitive, total private sector assumption of operation and maintenance cost risk is an alternative. In this case, the private participant would engineer, design, construct, start up, and operate the facility. This company would be liable for any interruptions in service and any increases in costs of operation. The private sector here would even assume risks over elements over which it had no control such as taxes, energy costs, or changes in user naoits. One can see the cost to the public of such risks being borne entirely by the private participant.

More practical is a shared assumption of operation and maintenance cost risk. Table 5-2 presents three scenarios for operation and maintenance cost risk sharing (6-8.23).

In the first scenario the situation exists where the public agency hires a private corporation to manage the facility for a guaranteed operating cost, plus a fee. Any charges in conditions are born by the public, while errors in judgment, planning, or poor projections are the private corporation's risks.

Scenario 2 is similar to scenario 1 except that the private sector accepts the risks of tax increases while the public sector assumes the risk of insurance increases. These two elements are negotiatable under this scenario and may be shared.

TABLE 5-2. OPERATION AND MAINTENANCE COST RISK SHARING

Risk element	Risk assumed by:					
	Scenario 1		Scenario 2		Scenario 3	
	Public	Private	Public	Private	Public	Private
Excessive downtime		X		X		X
Underestimation of costs		X		X	X	
Inout or influent changes	X		X		X	
User habit changes	X		X		X	
Increase in taxes	X			X[a]	X	
Increase in insurance		X	X[a]		X	
Legislation	X		X		X	
Poor management		X		X		X
Productivity		X		X		X

[a]Risk may be shared

In scenario 3 the public sector assumes the risk of underestimation of labor, materials, and other operating costs, plus utility and supply costs. This might happen where the public agency contracts with a private corporation who receives a fee for operating the facility using performance specifications.

CHAPTER VI

THE MCKAY BAY REFUSE-TO-ENERGY PROJECT

6.1 Introduction

The project consists of the facility, designed, constructed, and operated by Waste Management, Inc., under the design and construction contract and the operation and maintenance contract; and the related facilities, designed, constructed, and operated by the City of Tampa or by Tampa Electric Company.

The City of Tampa began investigating resource recovery in 1977, when Tampa, Plant City, Temple Terrace, and Hillsborough County formed the Solid Waste/Resource Recovery Management Committee by interlocal agreement. Using local funds, the firm of Brown and Caldwell Consulting Engineers was hired in November 1978, to assess various solid waste disposal options and to determine the feasibility of resource recovery in the Tampa area. The conclusion of the year-long investigation was that recovery from solid waste would be feasible in the Tampa area. In 1979, the local governments received $271,000 in financial assistance from the U. S. Environmental Protection Agency for Resource Recovery Project Development under the President's Urban Policy and proceeded to investigate specific recovery technologies while comparing them economically to landfill disposal over a 20-year period. After two years of technical studies, economic evaluations, and site visits to various types of operating resource recovery

facilities, the mass burn technology was selected as the most proven, reliable, and economical. In 1981, Major Bob Martinez issued Executive Order Number 81-4, effective June 8, 1981, establishing the McKay Bay Refuse-to-Energy Project.

While not conforming in all aspects to privatization as defined in Chapter I of this report, the McKay Bay Refuse-to-Energy Project does utilize many of the beneficial qualities of this concept. The major difference is that no private sector money was used to finance the project. There were two major reasons given by Nancy McCann, Management Analyst, McKay Bay Refuse-to-Energy Project, City of Tampa, for not utilizing private sector funds. The primary reason was the fear of escalating costs over the 20-year term of operation. The second reason was the reluctance of the city to share ownership with Waste Management, Inc. Both reasons are legitimate concerns and address two of the risk elements of privatization projects. As with all privatization projects, the City of Tampa was required to balance the risks and the benefits. The decision in this case was to contract for the private provision of the service, but without the financial participation which is normal in privatization projects.

6.2 The Facility Site

The facility is located on the 15.2-acre site of the old Tampa incinerator, which operated between August 17, 1967, and December 30, 1979. The city owned the site. Due to its history of use as a solid waste disposal site and its convenient location near the downtown area of Tampa, the site selection generated little public opposition. Additionally, access to the facility from major roadways was available

and little roadwork was required to improve access or mitigate traffic problems. See Figure 6-1 (33-19).

6.3 The Facility

The facility receives and stores solid waste, burns the waste, produces steam used to generate electricity, and recovers ferrous metals from the residual ash for salvage. The facility is designed to receive and combust 1,000 tons per day of processible waste generated from residential, commercial, industrial, and governmental operations. The mass burn technology, in which solid waste is received and burned without sorting or other pre-combustion processing, is utilized.

Raw waste is fed directly into the combustion chambers of refuse combustion furnaces. Each of the four combustion furnaces is designed to handle 250 tons of solid waste per day and may be operated independently of the other furnaces. The annual capacity of the facility is 300,000 tons. The hot gases created by combustion pass through boiler sections which generate steam. The steam in turn drives a 22.8 megawatt full condensing turbine generator to generate electricity, most of which is sold to the Tampa Electric Company. The residue remaining after combustion is processed to recover ferrous metals and aggregate for use in road construction (33-19). See Figure 6-2 (33-A14).

6.4 Related Facilities

The related facilities, for which the city is responsible, include scale and computer equipment used for recordkeeping, accounting, and traffic flow, access and entry roads to the facility site, potable water and sewer connections to the facility boundary, non-potable water connection for use as cooling water, a transfer

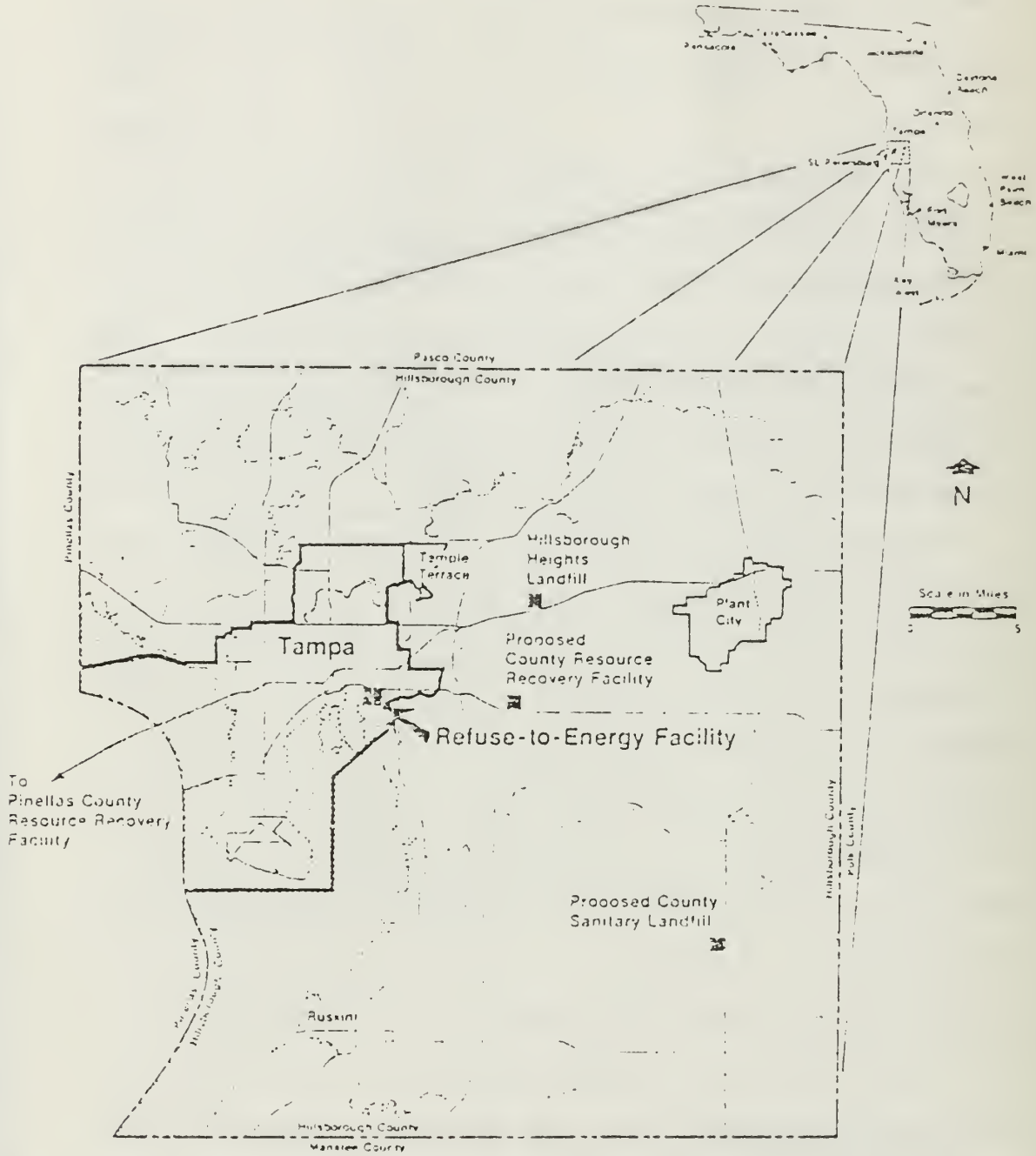


FIGURE 6-1

Site Location Map

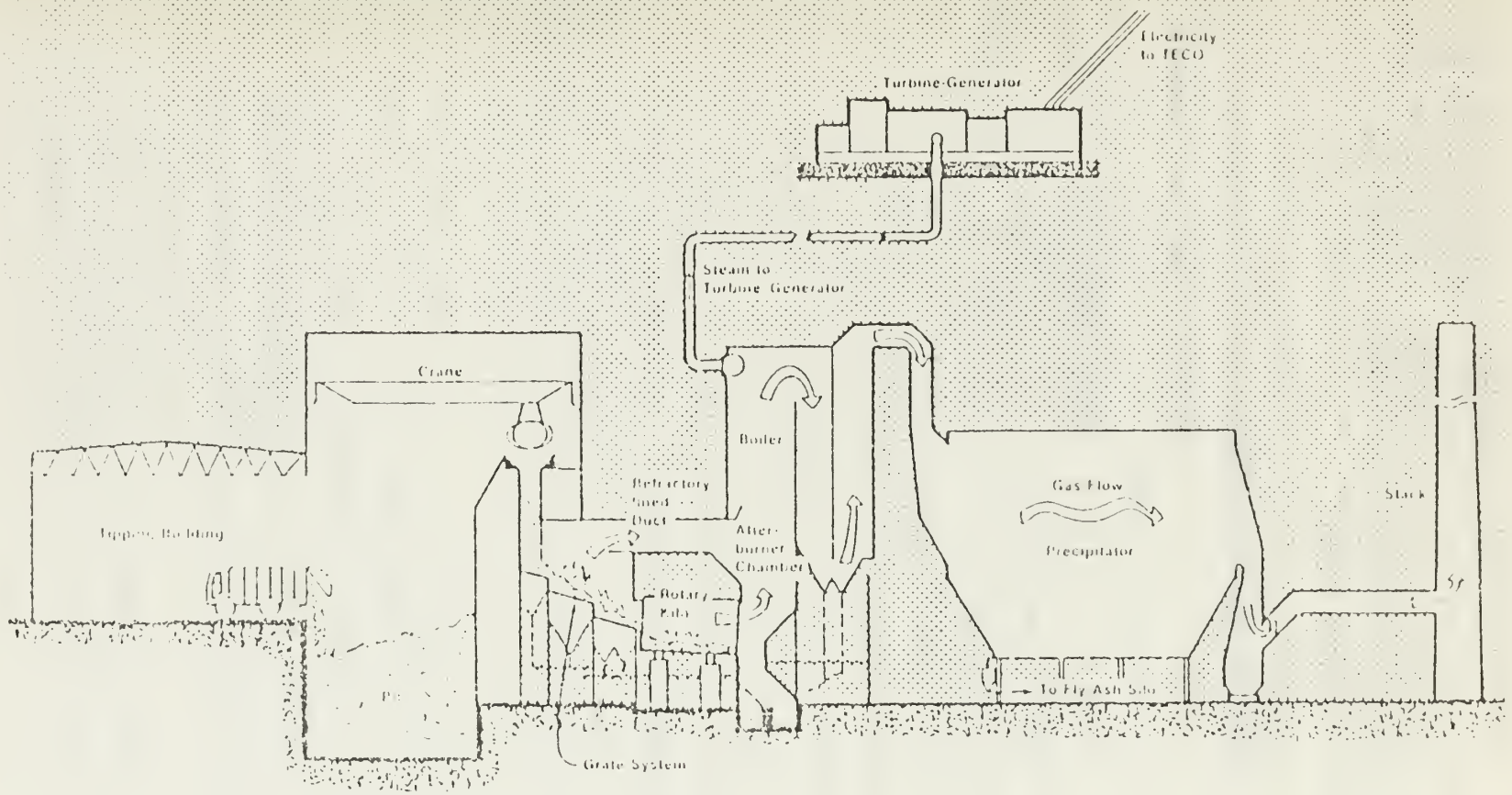


FIGURE 6-2

Process Flow Diagram
of Refuse-to-Energy Facility

station for handling emergency and excess tonnage, entryway and landscaping, and the 69 kilovolt transmission line and electrical interconnection equipment used for the transfer of electricity to the Tampa Electric Company (33-20).

6.5 Design and Construction Contract

On August 26, 1982, the City of Tampa and Waste Management, Inc., entered into a contractual agreement for the designing, construction, and testing of the waste disposal project. The contract was written with the intent that the contractor, under a separate contract, would operate and maintain the facility following construction. The contract price was established at $59,852,000 on October 12, 1981, and was adjusted periodically by an amount attributable to cost escalation due to inflation as shown in paragraph 6.5.4. The contract type was a fixed price with escalation due to inflation. Completion date was established at 1,095 days after the earlier of (1) the date the contractor commenced on-site construction of the facility, or (2) the date 30 days after receipt of the notice to proceed by the contractor. The notice to proceed was required within 180 days after the execution of the contract (33-20).

6.5.1 Estimated Project Costs

The project consists of the facility and the related facilities. The price set for the facility in the contract was $59,852,000 escalated from October 12, 1981. An independent consulting group estimated that $17,425,000 was necessary to provide for cost escalation through the 36-month period of construction. The city estimated the cost of the related facilities to be $4,091,000 plus

$466,000 for escalation. The total construction cost of the project including the facility, related facilities, escalation allowances, contingencies, engineering fees, and other costs was $85,031,000. The city's bond resolution required the city to pay $2,023,000 towards the construction of the facility from sources other than the bond proceeds. See Table 6-1 (33-21).

6.5.2 City Responsibility

The performance by the City of Tampa of its obligations under this contract was essential to timely completion and included (30-22):

- *The issuance and sale by the city of its revenue bonds in an amount sufficient to finance construction. This was required within 180 days following the execution of the contract.
- *The payment to the contractor of the facility price in installments on the basis of the percentages of the construction completed. Five percent retainage was maintained by the city until operational acceptance.
- *The furnishing of the facility site and the laydown and materials staging area, including full and complete access to the site to the contractor, its employees, agents, subcontractors, and suppliers.
- *The installation of the weigh scales necessary for the monitoring of the delivered waste to the facility.
- *The construction and maintenance of an access road and entrance to the facility site.
- *The provision and maintenance of permanent utility transmission systems for water, wastewater, and electricity up to the boundary of the facility site. Water and electricity used for

TABLE 6-1. ESTIMATED PROJECT COST

Waste Management, Inc. Contract Price	$59,852,000	
Related Facilities Cost	3,625,000	
		$63,477,000
Escalation Allowances:		
Waste Management, Inc.	$10,959,000	
Related Facilities	466,000	
		17,425,000
Independent Engineer's Fee	$ 400,000	
Sales Tax	250,000	
Start-Up Utility Costs	275,000	
Permits, Fees and Licenses	6,000	
Insurance	500,000	
Construction Contingencies(1)	2,680.000	
Total		4,111,000
		$85,031,000
The estimated total Project cost, $85,283,000, is to be funded as follows:		
Deposit to Construction Fund(2):		
From 1983 Bond Proceeds	$63,270,000	
City Contribution	2,023,000	$65,293,000
Interest Earnings to be deposited into Construction Fund(3):		
On Construction Fund	7,325,000	
On Capitalized Interest Fund	5,024,000	
On Debt Service Reserve Fund	3,902,000	
On Surplus Reserve Fund	807,000	17,058,000
Deposit to Surplus Reserve Fund(1) (4)		2,680,000
Funds Available(3)		$85,031,000

(1) Represents construction contingencies recommended by the Independent Consulting Engineer, to be deposited into the Surplus Reserve Fund from 1983 Bond proceeds.

(2) Includes Project costs, sales taxes, start-up utility costs, permits, fees, licenses and insurance, net of approximately $18,000 rounding amount.

(3) During The 36 month construction period, investments within the Construction Fund and the Capitalized Interest Fund are assumed to earn interest at 9.35% per annum, investments in the Surplus Reserve Fund are assumed to earn interest at 10.25% per annum, and investments in the Debt Service Reserve Fund are assumed to earn interest at 10.35% per annum.

(4) This amount is equal to the Surplus Reserve Minimum Requirement for the first full Bond Year.

construction was provided at the cost of the contractor while that used for testing and startup was provided at the cost of the city.

*The providing and maintenance of a storm drainage system up to the boundary of the facility site.

*Simultaneously with this contract, contract with Waste Management, Inc., for the operation and maintenance of the facility on behalf of the city for a period of 20 years.

*Deliver a notice to proceed to the contractor within 180 days of the execution of this contract.

*Simultaneously with this contract, enter into a written electric contract with the contractor for the sale and purchase of electricity between the Tampa Electric Company and Waste Management, Inc.

*Pay for all federal, state, and local taxes including tangible and intangible personal property taxes, sales, use, documentary stamp and other excise taxes, and ad velorem taxes relating to the facility or facility site.

*Acceptance of completed work that meets operational specifications set forth in the specification of the contract.

*The paying of operating fees to the contractor for start up, testing, or interior operations while awaiting acceptance.

*The cancellation of this contract for substantial, irremediable performance shortfall, or the requirement that the contractor purchase the facility.

*Indemnification of the contractor from all liabilities, actions, damages, claims, demands, judgments, losses, costs, and fees

posed by law for injury or death to persons or property resulting from the performance of this contract, or the issuance and sale of the revenue bonds.

*Exclusion of any implied warranty not expressly agreed in the contract.

*Reimbursement of the contractor for costs resulting from uncontrollable circumstances including labor, profit, materials, and equipment.

6.5.3 Contractor Responsibility

The contractor's work in designing, constructing, and testing the facility was required to be in a timely fashion and its obligations to the city included the following (30-18):

*The commencement of on-site construction within 30 days after receipt of the notice to proceed.

*The completion of construction prior to the passage of 1,095 days.

*The execution simultaneously with this contract of an operation and maintenance contract with the city for a 20-year duration of service, and an electrical contract with Tampa Electric Company for the supply and sale of generated and consumed electricity.

*The obtaining and maintaining of all permits, licenses, and approvals necessary for the performance of the contract.

*The provision of all labor, construction materials, tools, temporary structures and utilities, and equipment or machinery necessary to design, construct, and test the facility.

*The construction of drainage, roads, laydown, and staging areas within the facility site.

*Keeping the facility free from all liens and encumbrances.

*Providing access to the site, the laydown and materials staging area, and the facility to the city, its employees, agents, licensees, or guests, as well as to employees or agents of public authorities having regulatory jurisdiction over the facility site or the facility.

*Compliance with all applicable laws, ordinances, rules, regulations, orders, permits, and licenses of any public authority having jurisdiction.

*The submission of progress reports as required by this contract.

*Performance of all start up requirements and tests and construction in accordance with contract specifications.

*Payment of performance shortfall damages, voluntary or not, for performance which falls short of specification requirements. If this amount were equal or greater than 25% of the unfunded facility debt, the contractor may elect to purchase the facility.

*Indemnification of the owner from all liabilities, actions, damages, claims, demands, judgments, losses, and fees imposed by law for injury or death to persons on property resulting from the performance of this contract.

*The exclusion of any implied warranty not expressly agreed to in the contract.

*The furnishing and maintaining of bonds and policies of insurance payable to the city. Payment bond was in the amount of $60 million and performance bond in the amount of $60 million. Required insurances included worker's compensation, unemployment

insurance, employer's liability insurance, comprehensive general insurance, comprehensive automobile liability insurance, aircraft liability insurance, umbrella liability insurance with a limit of $50 million, builder's risk and installation floater insurance, and business interruption insurance.

6.5.4 Cost Escalation Due to Inflation

Each monthly progress payment was adjusted for inflation. The inflation adjustment was calculated in accordance with the following formula and the amount added to the monthly progress payment to determine the amount due (29-2).

$$\text{Inflation} = \text{SMP}\left[\frac{\%\,A}{100} \times \frac{WI_2 - WI_1}{WI_1} + \frac{\%\,B}{100} \times WPI_5 + \frac{\%\,C}{100} \times \frac{CLR_2 - CLR_1}{CLR_1}\right]$$

where

SMP = total monthly payment before adjustment

% A = home office and field nonmanual service component from Table 6-2 (29-4)

% B = material/equipment value component from Table 6-2

% C = field labor component from Table 6-2

WI_1 = average hourly earnings for engineering and architectural services (SIC 891) for the month of October 1991

WI_2 = average hourly earnings for engineering and architectural services (SIC 891) as published by the Bureau of Labor Statistics for the month in question

WPI_5 = the summation of the percentage increases in each index in Table 6-3 for the month in question (29-5). The percentage increase

TABLE 6-2. ADJUSTMENT COMPONENTS

The monthly progress payments are composites of projected expenditures for three components: A-Home Office and Field Nonmanual Services, B-Material and Equipment and C-Field Labor Costs. These components are as follows:

Months	%A	%B	%C
1- 6	28	53	19
7-12	17	62	21
13-18	16	46	38
19-24	22	25	53
25-30	21	19	60
31-37	70	20	10

TABLE 6-3. INDEXES

Code(n)		Weights(W n)
PPI 0811	Softwood Lumber	.002
PPI 10	Metal and Metal Products	.035
PPI 101	Iron and Steel	.103
PPI 1013	Steel Mill Products	.040
PPI 1013-02	Finished Steel Mill Products	.066
PPI 1013-0248	Structural Shapes	.004
PPI 1013-0255	Bars, Reinforcing	.004
PPI 1026	Wire and Cable	.011
PPI 107	Fabricated Structural Metal Products	.038
PPI 1074	Struct., Arch., Pre. Eng., Metal Prod.	.004
PPI 1074-02	Fabricated Steel Pipe and Fittings	.014
PPI 114	General Purpose Machinery & Equipment	.056
PPI 1149-0104	Gate Valve, Cast Steel 6"	.009
PPI 1175-04	Switchgear, Switchboard, etc., Equipment	.056
PPI 1333-0101	Concrete, Ready Mix	.027
SIC 3443	Fabricated Metal Products	.101
SIC 355	Special Industry Machinery	.069
SIC 36	Electrical Equipment and Supplies	.063
BTN 73	International Iron and Steel	.159
OST	Smith and Mechanics	.159
		1.000

for each index except BTN73 and OST was calculated as follows:

$$WPI_n = W_n \times \frac{E_{2n} - E_{1n}}{E_1}$$

For index codes BTN73 and OST, the percentage increase was calculated as follows:

$$WPI_n = W_n \times \frac{E_{2n} - E_{1n}}{E_{1n}} \times \frac{CE_2}{CE_1}$$

where

WPI_n = percentage increase in index value for the month in question for a particular index code

W_n = weight in Table 6-3 for the index code

E_{1n} = index value for index code for month of October 1981

E_{2n} = index value for index code for month in question. The source of the indexes are the U. S. Department of Labor Bureau of Labor Statistics monthly report "Producer Prices and Price Indexes," the U. S. Department of Labor Bureau of Labor Statistics monthly report "Employment and Earnings," the Journal of Steel Fabrication, and from "Denmark Statistics"

CE_1 = currency exchange rate of U. S. Dollar per Danish Krone as of July 22, 1982

CE_2 = currency exchange for month in question

CLR_1 = a composite of hourly wage rates including benefits for October 12, 1981. See Table 6-4 (29-6)

CLR_2 = a composite of hourly wage rates including benefits for the month in question. See Table 6-4

TABLE 6-4. WAGE RATES INCLUDING BENEFITS

Craft	A Base Hourly Wage	B Health & Welfare	C Hourly Pension	D (A+B+C) Total	E Weight	F (DxE) Composite
Boilermakers	12.90	1.38	1.20	15.48	.37	5.73
Electricians	13.15	.72	.40	14.27	.26	3.71
Pipefitters	12.46	.90	.85	14.21	.26	3.69
Asbestos Workers	14.75	80	.80	16.35	.05	.82
Bricklayers	12.25	.70	.70	13.65	.06	.82
					1.00	14.77

6.5.5 Risk Sharing for Construction

This contract divided risks between the city and the contractor as shown in Table 6-5.

TABLE 6.5. RISK SHARING FOR CONSTRUCTION

Risk element	Risk assumed by:	
	City	Contractor
Delays		X
Overruns		X
Achievement of operation performance		X
New legislation	X	

The contractor guaranteed facility construction within 1,095 days, maximum total capital cost of $59,852,000, and certain performance levels as contained in the contract specifications. While the city issued bonds up to the cost of the facility, overruns, except for those due to new legislation, were agreed to be borne by the contractor.

6.6 Operation and Maintenance Contract

Concurrent with the design and construct contract, the City of Tampa and Waste Management, Inc., on August 16, 1979, signed an operation and maintenance contract by which the contractor, Waste Management, Inc., would operate and maintain the waste handling and energy generation facility at McKay Bay for the city for a period of 20 years (32-1).

6.6.1 Definitions

Certain terms with specific definitions were used in this contract and are essential to the understanding of the contract.

Processible Waste. Solid waste provided by the city to the contractor for the purpose of recycling (32-8).

Net Processible Waste. Expressed in tons, the weight of processed waste minus the residue that remains after processing (32-7).

Guaranteed Weekly Delivery. During any period of seven consecutive days, 3,000 tons of processible waste (32-6).

Guaranteed Semi-annual Delivery. During any six-month period from October 1 to March 31, 78,000 tons of processible waste. During any six-month period from April 1 to September 30, 200,000 tons of processible waste (32-5).

Base Operating Fee. Set at $19.14 as of October 12, 1981, and adjusted at the beginning of each contract year for inflation. This is the fee paid by the city to the contractor for each ton of not processible waste up to 200,000 tons per year (32-2).

Excess Operating Fee. Set at $6.[illegible] as of October 1[illegible], 19[illegible], and adjusted at the beginning of each contract year for inflation. This fee is paid by the city to the contractor for each ton of net processible waste for anything greater than 200,000 tons per year (32-4).

Line Hour of Maintenance. Any given hour during which any one of the four incinerators at the facility is unavailable for the processing of waste, other than uncontrollable circumstances such as acts of God, labor problems, change in laws, court actions, defect in equipment if still under warranty, city, or state actions (32-6).

Applicable Line Hours of Maintenance. During any calendar quarter, 2,160 line hours of maintenance, and during any contract year, 6,240 line hours of maintenance (32-2).

6.6.2 City Responsibilities

During the 20-year operating period, the city is required to assist and cooperate in the operation and maintenance of the facility in the following areas (32-20):

*The city will provide and maintain for the contractor full and complete access to the facility including the use of a paved access road and entrance.

*The city will provide and maintain the weigh scale house system in an efficient manner, including operating truck scales. The city will weigh all processible waste, rejected material, residue, and secondary materials and will keep daily records for the purpose of calculating proper compensation.

*The city will collect and deliver processible waste to the facility in an amount equal or greater than those guaranteed in the contract.

*The city will not enter into any agreement that terminates or amends the electric contract between the city and the contractor. All electricity produced at the facility will be purchased as agreed to in the electric contract.

*The city will provide and maintain utilities including water, wastewater, and electricity up to the boundary of the facility site. The city will further maintain the electricity transmission lines used for the transmitting of electricity to the city as agreed in the electric contract.

*The city will maintain legal title to the facility site.

*The city will maintain storm drainage up to the boundary of the facility site.

*The city will deliver processible waste to the facility between the hours of 6:00 a.m. and 7:00 p.m., with delivery on an emergency basis at any time.

*The city will transport process rejects at its cost from the facility.

*The city can collect user fees in whatever amount and method it deems necessary. Operating fees are paid for each ton of net processible waste based on the base operating fee for the first 200,000 tons per year and the excess operating fee for each ton exceeding that amount.

*The city will reimburse the contractor for his insurance costs, all utilities used in the operation of the facility, all state sales and use taxes imposed in the purchase of replacement components of the facility.

*In accordance with the electric contract, the city will pay the contractor 10% of all revenues received by the city from the sale of electricity generated by the facility.

*The city will receive 10% of the revenues resulting from the sale of secondary materials, such as metals and glass, sold by the contractor.

*The city can collect from the contractor damages for energy generation inefficiency if such inefficiency is caused by the

as compared to the original specification. The contractor is also liable if it rejects processible waste not exceeding 3,000 tons during a seven-consecutive day period or if it exceeds the applicable line hours of maintenance.

*The city, if it fails to deliver processible waste in quantities less than that guaranteed in this contract, will pay the contractor the difference times the base operating fee.

*The city agrees not to seek monetary damages from the contractor for breach of this contract.

*The city will indemnify the contractor from all liabilities imposed by law for injury or death to persons or property as a result of the contractors acts or omissions in connection with this contract.

*The city makes no implied warranties not expressly in this contract.

6.6.3 Contractor Responsibilities

The contractor, Waste Management, Inc., is responsible for the operation and maintenance of the facility. Its responsibilities include (30-15):

*The contractor will receive and incinerate processible waste.

*The contractor will generate electricity at the facility for sale by the city as agreed in the electric contract. The contractor will receive 10% of the revenues resulting from this sale.

*The contractor will recover secondary materials, such as metals and glass, for reuse or sale. The contractor will retain 90% of the revenues resulting from this sale.

*The contractor will obtain and maintain in effect all permits, licenses, and approvals necessary for the operation of the facility.

*The contractor will maintain and repair the facility at its cost and expense, including the replacement of machinery and equipment components. The contractor may, at its expense, make alterations or additions in order to improve the operation of the facility. Alterations affecting the structure or system design of the facility require consent of the city.

*The contractor will furnish directly all labors and materials, including replacement equipment and machinery and tools necessary to operate and maintain the facility.

*The contractor will keep the facility free and clear of all liens arising out of or in connection with the acts, ommissions, or debts of the contractor.

*The contractor will provide reasonable access to the site to the city, its employees, agents, licenses, or guests, plus employees and agents of public regulatory agencies.

*The contractor has the right to consume electricity generated in amounts necessary to operate the facility. The agreed amount is specified in the electric contract. If this amount is exceeded, the contractor will reimburse the city for the amount consumed.

*The contractor will not be obligated to accept processible waste in excess of either 7,000 tons in any seven-day period or 300,000 tons per contract year. In order to accommodate daily variations in collection by the city, the contractor will accept

up to 22% of the weekly limit in any day, as long as the weekly limit is not exceeded.

*The contractor will not exceed the applicable line hours of maintenance, but may reject deliveries if under the applicable line hours and if 3,000 tons of waste has already been accepted during the past seven-day period.

*The contractor is responsible for removing all residue resulting from the processing of the waste at its own cost to a site selected by the city.

*The contractor will be liable for energy generation inefficiency and will reimburse the city for lost electricity revenues.

*The contractor agrees not to seek monetary damages from the city for breach of this contract.

*The contractor will indemnify the city from all liabilities imposed by law for injury or death to persons or property as a result of the contractor's acts or omissions in connection with this contract.

*The contractor makes no implied warranties not expressly in this contract.

*The contractor will secure and maintain, at the city's cost, worker's compensation, unemployment insurance, employer's liability insurance, comprehensive general liability insurance, comprehensive automobile liability insurance, aircraft liability insurance, umbrella liability insurance, permanent property insurance, and business interruption insurance.

6.6.4 Inflation Adjustment of Operating Fees

To determine the adjustment for inflation for the base operating fee and the excess operating fee, the dollar amounts will be adjusted using the following equations (31-2):

$$\text{Adjusted base operating fee} = \text{base operation fee} \times \frac{CPI\text{-}2}{CPI\text{-}1}$$

$$\text{Adjusted excess operating fee} = \text{excess operating fee} \times \frac{CPI\text{-}2}{CPI\text{-}1}$$

where:

base operating fee = $19.14 as of October 12, 1981.

excess operating fee = $6.23 as of October 12, 1981.

CPI = the Consumer Price Index for the U. S. city average, all items--all urban wage earners and clerical workers, published by the U. S. Department of Labor, Department of Labor Statistics.

CPI-1 = the published CPI for the month of October, 1981, equal to 279.7 with 1967 as base year equaling 100.00.

CPI-2 = the CPI for the month preceding the effective date of the rate installation or change.

If the CPI is discontinued, the contractor and the city will mutually select another index.

6.6.5 Risk Sharing for Operation and Maintenance

This contract divides risks between the city and the contractor as shown in Table 6-6.

6.7 Waste Management, Inc.

Waste Management, Inc., was incorporated in Delaware in 1968 and is engaged primarily in the waste management business. Its principal

TABLE 6-6. RISK SHARING FOR OPERATION AND MAINTENANCE

Risk element	Risk assumed by:	
	City	Contractor
Excessive downtime		X
Underestimation of labor, material requirements		X
Residue costs	X_S	X_S
Unavailability of solid waste	X	
Composition changes	X	
Increase in taxes		X
Increase in insurance		X
Legislation	X	
Poor management		X
Recovery yields		X
Increase in O & M costs		X

X_S = shared risk--contractor transports, city provides site

offices are located at 3003 Buttonfield Road, Oak Brook, Illinois 60521.

Waste Management, Inc., provides integrated solid, chemical, and low-level radioactive waste management services to commercial, industrial, and municipal customers. The services provided include storage and collection, transfer, interim processing, and disposal of waste. Since January 1977, Waste Management, Inc., has been involved with international projects in Riyadh and Jeddan, Saudi Arabia, Buenos Aires and Cordoba, Argentina, and Caracus, Venezuela. Their reported net income for the year ending December 31, 1982, was $106,524,000 compared with $84,033,000 the previous year. Revenues for the year ending December 31, 1982, were $966,548,000 compared with $772,690,000 for the prior year (33-23).

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Privatization is rapidly emerging as a popular means for the financing of public works construction. Privatization in a general sense is interpreted as the delivery of any service traditionally provided by the public sector which is instead provided by the private sector. In this report we have seen that true privatization encompasses more than this. The privatization concept involves private sector involvement in financing, design, construction, ownership, and operation and maintenance of the service facilities.

The need for privatization is real. The nation's public works infrastructure is in a serious state of decline with many examples existing which are indicative of years of neglect. Almost every type of public works facility is affected. Those facilities which are operable are often strained beyond capacity. The need to modernize, repair, replace, and expand exists in almost every area of public works and in every area of the United States. There is constant competition for investment dollars between the private and public sectors, and there has been a steady decline in investment in public facilities over the past decade. The private sector cannot be expected to finance the total nationwide need, but its share will most likely continue to increase in the future.

Privatization has many advantages. For the public sector, government, or agency, it allows the preserving of local debt capacity for other essential purposes. It minimizes federal and state involvement in local affairs. It draws upon private sector expertise and experience to perform planning, construction, and operational tasks. Private sector pay scales and benefits can affect and retain qualified personnel where the local government may not be able to. The private sector can experience significant economies of scale in the operation of multiple facilities. This includes the ability to share operators, the ability to consolidate common services such as maintenance, administration, and laboratory services, and the ability to bulk order certain supplies and consumable commodities. The private sector is able to reap tax benefits such as a 10% investment tax credit, 5-year depreciation of machinery and equipment, 15-year depreciation of structural facilities, and the deductibility of any interest expense. Finally, the experience a company might have in the area of concern and the profit incentive which accompanies efficient ownership and operation would create better management, lower prices, and better service than a public sector counterpart.

Of the options available for structuring the privatization transaction, including sale/leaseback, sale with an operating contract, or the turn-key full service agreement, the most commonly used arrangement appears to be a modification of the turn-key full service arrangement. The modification is that the owner operator private participant's ownership share is less than 100%. The public and private participants divide the initial investment. There appears to be a reluctance on the part of local governments to agree to total

private sector ownership. The fear is that by turning [illegible] services to the private sector, the municipality may have [illegible] control and authority over those services. This fear can be accommodated by an inspection program and a comprehensive series of safeguards included in the contractual agreement.

The survey of major contractors had limited [illegible]. In general, favorable responses indicated that corporations are interested in privatization as a means of generating contracts with communities or government agencies who would otherwise not be able to fund the projects. While profit motive is the primary motivation for entering the field of privatization, full employment of otherwise idle work forces, and entry into new fields of construction were also mentioned.

The Arthur Young method for the implementation of privatization is a very comprehensive and effective means of developing a privatization project. Its steps of problem analysis, development of alternatives, vendor procurement, and implementation process ensure control over the entire life of the contract. Whatever method is used, control is essential to ensure that the necessary and desired service is delivered to the public. Above all, the local government or agency must realize that it is still providing the service, whether or not it is directly producing it, and as such is totally responsible to the public for the quality and availability of the service.

This report was presented as an overview of privatization and it must attempt to analyze in depth any specific area. Further analysis will be necessary by following reports to develop the subject in depth.

[illegible]

Although this report was [illegible], [illegible] recommendations can be made to any community [illegible] privatization concept. Because privatization [illegible] case-by-case basis, these recommendations [illegible] be utilized to the individual level. [illegible]

- Interested communities should seek the assistance of a [illegible] privatization consultant at the conceptual stage. [illegible] the relative newness of this concept, a consultant's help can ensure that proper decisions are made and options selected.
- The community should choose the privatization option [illegible] to its needs. This must be on a case-by-case basis. No effort should be made to fit an old project to a new need.
- A detailed risk analysis should be conducted to weigh the benefits against the disadvantages and to decide which risks should be borne by the community, which should be borne by the private sector, and which should be shared.
- [illegible]
- The community should take great care in preparing the request for proposals to ensure quality bids and healthy competition.
- If funding is not a problem, privatization might not be best. The disadvantages of privatization are real and must be weighed against the benefits when making a decision. [illegible] of cost, some traditional arrangements will prove more effective.
- The community should not use privatization [illegible] to eliminate competition, [illegible]

[illegible]

1. [illegible]

   [illegible]

   a. [illegible]

   [illegible]

   b. What [illegible] would be [illegible] [illegible]

   involved?

   c. What city participation (i.e., [illegible]

   [illegible]) do you have in your [illegible] contract [illegible]

   [illegible]? What [illegible] [illegible]

   [illegible], and electric [illegible]?

2. [illegible]

3. Do you have a separate utility contract with the city for [illegible]

   included within the privatization [illegible]? If [illegible]

   [illegible] provide for an [illegible]?

4. [illegible]

   a. Do you require [illegible], billing or [illegible]

   collect from users?

5. [illegible]

10. [illegible]

11. What is your policy concerning site [illegible] and

    operation price) by city [illegible]?

12. [illegible]

13. [illegible]

14. [illegible]

[illegible] Co.	[illegible], AL	131		
[illegible] Co., Inc.	[illegible], TX	11		
[illegible] & Roe, Inc.	Oradell, NJ	18		
CBI Industries, Inc.	[illegible], IL	[illegible]		
Centrax Corp., Inc.	Dallas, TX	36		
CT Main Corp.	Boston, MA	3	Yes	No
Dick Corp.	Pittsburgh, PA	50		
Dillingham Corp.	[illegible], MI	31		
Electro Service, Inc.	New York, NY	12		
Enterprise Bldg. Corp.	[illegible], FL	--		
Federal Const. Co.	St. Petersburg, FL	73		
Fluor Eng. & Constructors	Irvine, CA	[illegible]	Yes	Yes
Fluor Eng. & Constructors	[illegible], TX	[illegible]		
Fluor Power Services, Inc.	Chicago, IL	?		
Ford, Bacon, & Davis Const.	Monroe, LA	39		

Foster Wheeler Corp.	Livingston, NJ	10
George A. Fuller Co.	New York, NY	37
Edward J. Gerrits, Inc.	Miami, FL	110
Gilbane Building Co.	Providence, RI	25
The Hardaway Co.	Columbus, GA	78
Harbert Const. Co.	Birmingham, AL	77
The Haskel Co.	Jacksonville, FL	176
Henningson Durham, & Richardson	Dallas, TX	--
HRH Construction Corp.	New York, NY	53
Huber, Hunt & Nichols, Inc.	Indianapolis, IN	34
Jacobs Eng. Group, Inc.	Pasadena, CA	29
JA Jones Const. Co.	Charlotte, NC	16
Peter Kiewit Sons, Inc.	Omaha, NB	27

Koppers Company, Inc.	Pittsburgh, PA	83		
The Lummus Company	Bloomfield, NJ	9	Yes	No
McCarthy Bros. Co.	Brentwood, MO	33		
McDermott, Inc.	New Orleans, LA	15		
Mellon-Stuart Co.	Pittsburgh, PA	41		
Metro Waste Control Comm.	St. Paul, MN	--		
Morrison-Knudson Co., Inc.	Boise, ID	11		
Morse/Diesel, Inc.	New York, NY	30	Yes	No
Newberg Constr Co.	Chicago, IL	57		
The Parsons Corp.	Pasadena, CA	5	No	Yes
Paschen Contractors, Inc.	Chicago, IL	60		
C. L. Peck Contractor	Los Angelas, CA	55		
PERI Corp.	Dallas, TX	--		
Perini Corp.	Framingham, MA	22		
Phelps Const. Co.	Greeley, CO	75		

Raymond Int., Inc.	Houston, TX	6		
Research-Cottrell	Somerville, NJ	--		
Rockaway Valley Sewerage Auth.	Boomton, NJ	--	Yes	No
The Rodgers Co., Inc.	Nashville, TN	54		
The Rust Eng Co.	Birmingham, AL	--		
Sigma Con.	Orlando, FL	279	Yes	Yes
Stone & Webster	Denver, CO	17		
Sundt Const. Co.	Tucson, AZ	81		
Swinerton & Walberg Co.	San Francisco, CA	51		
Tishman Realty & Const.	New York, NY	26		
Turner, Collier, & Braden, Inc.	Houston, TX	--		
Turner Const. Co.	New York, NY	19		
United Eng & Const., Inc.	Philadelphia, PA	391		
Utley-Jones	Austin, TX	222		

Whiting-Turner Contracting	Baltimore, MD	76	Yes	Yes
Wright Schuchart, Inc.	Seattle, WA	68		
H. B. Zachry Co.	San Antonio, TX	48		

NOTE: Blank in "response received" column indicates no response. Blank in "involved in privatization" column indicates unknown position.

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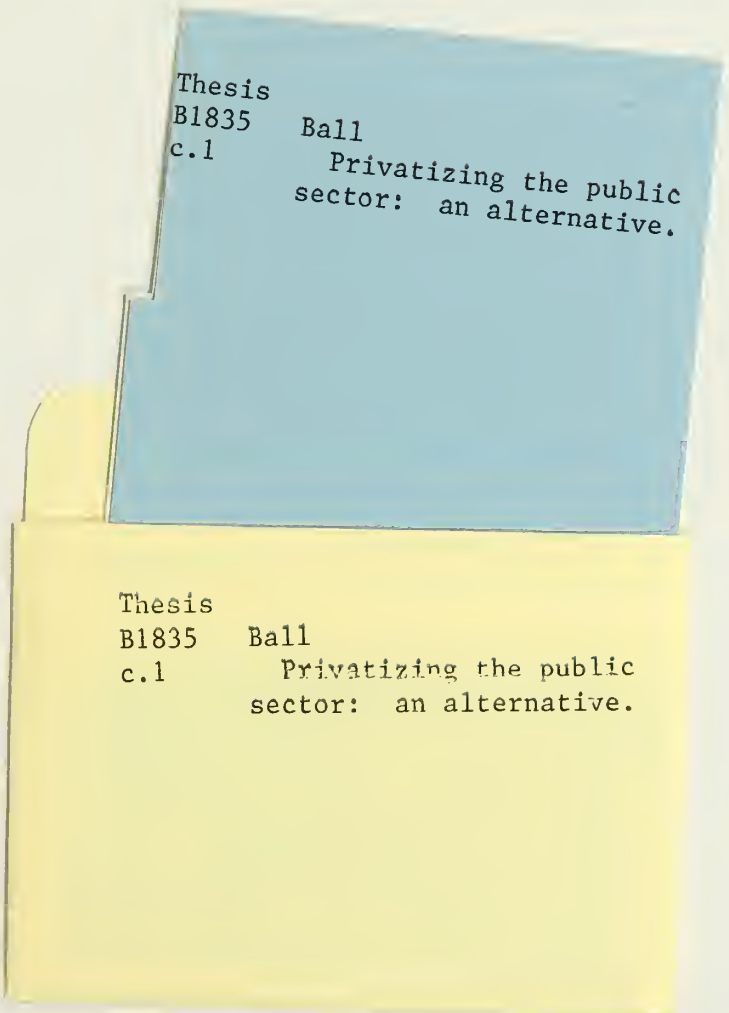
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